The Journal of the Society of Automotive Engineers

JANUARY, 1927

INDEX TO VOLUME XIX

July-December, 1926



THE SOCIETY OF AUTOMOTIVE ENGINEERS, INC. 29 WEST THIRTY-NINTH STREET NEW YORK CITY



THE JOURNAL OF THE SOCIETY OF AUTOMOTIVE ENGINEERS INDEX TO VOLUME XIX, JULY-DECEMBER, 1926

July	PAGES 1-116	Air-cooled engines in naval aircraft (Commander E E Wilson, U S N)	***	Individual ownership	246
August	117-188	Air-Cooling	616	Lighting equipment for 197,	318
September	189-322			Navy requirements and policy	192 230
October	323-430	Superiority questioned Water-cooling versus, for aircraft	192	Ship drift differs from	163
November December	431-512 513-690	engines	320		230 231
A		Aircraft		Airplanes for individual ownership (Louis	194
Acceleration		Air-cooled engines in naval 191, 221,			134
Good, and smooth operation de of motorcoaches How tests are made	emanded 179 376	Cooperation in design	224 507 209		314
Accelerometers		ground stations Establishment of understanding among	210	Development of Lighting Lighting equipment for 197,	485 312 309
Contact, gap-clearance Lower contacts, use of	433 434	research, design and operation of branches History of radio beacons	196 213	Air-pressure and fuel injection Air Service's contribution to aeronautical progress	73 195
Accessories grouped in removabl aeronautic-engine Accuracy of metal temperatures	assured 82		216 212	Airships	
Acid in crankcase, water and Acker, G H, on Suitability of Tive Worm-Gearing	AUTOMO- 467	Means for obtaining directional effects Powerplant	211 225	Metalclad rigid development	391
Action, application and constru universal-joints (C W Spi		Economy Weights compared Radial and in-line engines	$\frac{221}{223}$	Mooring and handling rigid, method for	134
Addresses		Robinson method of signaling Signal method used by Zeppelins Tendency to increase power not sound	212 210 223	Air Transport European	337
Bingham, Hiram	195	Transmission of rotating equisignals	218	National, route	319
Brumbaugh, A K Clarkson, C F Cunningham, W J	199 199 526	Types required Aircraft Engines	222	Air transport in Europe Air-transport session at aeronautic meet- ing	196
Davison F Trubee	195 199		907	Airway maintenance	488
Gardiner, Lester D Keene, Charles G Lewis, George W	525 195, 199	Advantages of J-5 cylinder Air-cooled naval 191, 221,		Airways	
MacCracken, W P, Jr Walsh, David I	195, 195 196 525	Air-cooling versus water-cooling Block type shorter and more rigid Cooling efficiency	320 240 225	Lighting development	310
Warner, E P Admixture distillation-characteri	196 istics and	Cooling efficiency and fuel consumption of Wright Whirlwind	307	Lighting equipment for 197, 309, Maintenance	488
fuel Aerial navigation (Bradley Jone	26	Cost Dependability	226 226 226	Alcohol and glycerine about equally effective as anti-freezing solutions	94
Aeronautic Banquet, S A E		Durability Endurance tests of Wright Whirlwind Estimation of progress made	308 224	ALLEN, H H, ON BRAKE CODE AND DYNAMIC BRAKE-TESTER ALLEN, H H, ON BRAKES ALLEN, T WARREN, ON FIELDS AND RE-	542 439
Announced Reviewed	7, 119 194	Further development of Wright Whirl- wind How lower cost will come	306 193	QUIREMENTS FOR AUTOMOTIVE EQUIPMENT IN HIGHWAY BUILDING	650
Aeronautic Division, S A E		Maintenance Mounting of supercharger with	$\frac{226}{262}$	Altimeter Aluminum bronze, patents on	231 339
Activities Subjects assigned	340 562	Nine-cylinder radial air-cooled Probable future development Problems involved and materials used	243 245 244	Aluminum	
Aeronautic Meeting, S A I	\mathcal{E}	Production Progress in design Radial and in-line	226 239 223	Crankcase for aeronautic engines forged in halves	611
Aircraft factory visited Airplane session	198 193	Requirements Results obtained in service with Wright	224	Depth of tapped holes in Amendments to by-laws, S A E	338 562
Air-transport session Banquet and visits announced	196 7, 119	Whirlwind Roots supercharger for Liberty-12	306 257	America, will, copy foreign car? American Automobile Association Con-	623
Committees Engine session	120 191 119	Roots-type supercharger Subsequent development of Whirlwind	253 305	test Board, representative American Engineering Standards Committee year book issued	
Inspection trip planned Program Reviewed	120 191	Supercharging Supercharging maintains power at alti- tude	222	American income American machine-tools in Great Britain	99
Speakers announced Technical sessions announced	119	Superiority of air-cooling questioned Tendency to increase power not sound	192 223	American Society for Steel Treating cooperation with, at production meeting	
Aeronautic standards cancelled Aeronautics	340	Test results of Wright Whirlwind sum- marized 12 and 6-cylinder V	308 241	America's share in world trade increasing Analogy between oil-grooves and tire	350
Army Air Service's contril	bution to	V-1400 model lighter and more power- ful	242		547 534
progress Army-Navy standards	195 15	V-type without reduction gears Wasp and Hornet 192, Wright Whirlwind type J-5, develop-	609	Annual meeting, 1927, announcements	, 534
Standardization outlined Standards concelled	13 340	ment of 192, 303 Aircraft factory visited		A . 1	
Air		Airfaring folk, present status of aviation with a few suggestions to	483	Airplane, effect of the field on	219
Balancing supply and ex motorcoaches	haust in	Air-fuel distillation method Airifying the general staff	156	the loop and airplane	219
Cooling-fan supplies heated Thinking in terms of	176 484	Airplane engines, superchargers for Airplane session at aeronautic meeting	388 193	tions	220
Air-Cleaners		Airplanes		Anti-France Solutions	213
Effect on crankcase-oil conta		Accumulation of ice on Air-cooled engine tests	233 222		
Screen material and manner ment Studied	of place- 542 542	Air-speed indicator	232	Desirable properties of radiator liquid	639 ls 94
Air-cleaning devices studied	542	Antenna, effect of field on the Better performance demonstrated	219 615	Glycerine and alcohol about equal; effective	y 94
Air-Cooled Engines		Commercial builders need cost reduction Compensation of the compass	617		94
Airplane-tests Cooling always limited by cyl	inder area 622	Economical and rapid production of all metal	193	Hydrometers needed for	641
Cost reduction a basic reason velopment	on for de-	Engines are kept running when landing at emergency fields	233	Neutral glycerine does not attac rubber	k 96
Naval aircraft Temperature does not affect sumption	191, 221, 616 fuel con- 620	of the loop and the antenna char	219	Salt solutions are corrosive Survey of available materials for radi ator liquids	i- 96

Anti-Freeze Solutions (Concluded)		Wiring color-scheme Worm gear	554 635	Balloon Tires	
Viscosity Effect of, in thermosiphon systems Increases with concentration and	641	Automobiles of today and tomorrow (Herbert Chase)	51	Adaptability to motorcoach service Evils of overloading	47 48
cold	95	Automotive equipment, fields and require- ments in highway building	650	Heavy vehicles Large cross-section and dual wheels,	45
Anti-freeze solutions and compounds (H K Cummings) 93, 247,	639	Automotive freight transportation, special committee on fundamentals of	517	effects of Precautionary measures	46 48
Anti-Knock		Automotive industry	509		208
Audibility tests and knock-intensity	* 77	Automotive Industry		Hale) BALLOU, C M, ON PUBLIC'S RECEPTION OF	45
Audibility test-method for fuels	17	Changes in manufacturing processes and machinery	509	MOTORCOACH SERVICE IN CLEVE-	445
Application of group bonus to non-	17	Conveyors used in 325, New uses for rubber	343 541	_	
productive labor (Joseph Lannen)	145	Rubber as material Work it should do for transportation	$\frac{541}{605}$	Banquets	104
Appropriation	409	Automotive-type brakes built on axles Automotive worm-gear (L R Bucken-		Aeronautic 7, 119, Transportation and service 334,	525
Essential for aviation	483 484	dale) Autumn and winter problems in aviation	635 233	Bases, sockets and plugs Battery and magneto ignition available	552 495
Armature-reaction	537	Aviation		Beacons .	
Armatures and field arrangement Army Air Service's contribution to aero-	69	Accumulation of ice	233	Airport, and boundary lights	314
nautical progress (F Trubee Davison)	195 15	Accuracy of flight with interlocking signals	218		311 214
Army-Navy aeronautic standards Ash, significance of, in oil Assembly conveyors combined with trans-	674	Activity in European countries Aerial navigation	337 162	Gas and electric flashing Goniometer, description of	315 214
portation Assistant secretaries of aviation	420 486	Aids to location of position Airifying the general staff	230 486	History of radio Loops	213
Atmosphere engine Atmospheric pressure, conversion at,	649	Air transport in Europe Airway maintenance	337 488	Current distribution Types of	214
produces naphthene ATTENDU, ANDRE C, ON ATTENDU HEAVY-	78	Appropriation is essential Assistant secretaries of Authorization of appropriation is not	484 486	Neon-gas Stationary and rotating equisignal 197, 24-in.	319 209 311
OIL ENGINE Attendu heavy-oil engine (Andre C	72	actual appropriation British policy and air services	483 337	24-111.	911
Attendu) Audibility anti-knock tests and knock-	72	Canada Drift measurement and sextant obser-	234	Beams	
intensity evaluation (Daniel Roesch)	17	vations Earnings are small	163 337	Self-protective feature of adjustable Variations in depth	341
Audibility test-method for anti-knock fuels	18	Fog most important summer problem Future	232 486	Bearings	
Authorization of appropriation for avia- tion is not actual appropriation	483	Future of commercial	441	Connecting-rod boring-fixture	600
Automobile gear production (Charles L Cameron) 327, Automobile headlighting symposium		Illumination of airways and landing- fields	197	Facing and filleting edges Hydraulic system for applying pres-	600
	100	Insurance rate an index of safety	485	sure to test Method of making a test-run	358 359
Automobiles	172	Keeping up the public's interest Landing-fields for large cities	483	Mounting of test Reconditioning, method of	357 184
Buyers misled regarding care Cheap light metal would reduce weight Coincidental locks		New acts Present status with a few suggestions		Results of tests Supplying oil to test	359 358
Comparison of price and operating cost Durable colored upper-structure finishes	64	to airfaring folk Problems of autumn and winter Public should be taught the truth	483 233	Tests with second Why a main, boring-flxture is used	360 598
coming European trend	53 624	about Public should become airwise	195 484	BEDFORD, C W, ON EFFECT OF BRAK- DRUM HEAT ON MOTORCOACH TIRES	
Evolution Fine small	34 624	Radio direction-finding Safety, cost and comfort three problems	197	Belts, leather V-type, correct angle of	529 547
Gear production Gear-steels and the production of	327	of civil Service and commercial	196 441	Benzol production BETHUNE, JOHN, ON GEAR-STEELS AND	
gears 326, Hand signals	422 654	Signal service to air-transport com-		THE PRODUCTION OF AUTOMOBILE GEARS 326,	422
High average operating-temperature and operation	81	Situation in Germany and France Some peculiarities of polar navigation	337 163	BINGHAM, HIRAM, ON PRESENT STATUS OF AVIATION WITH A FEW SUGGES-	
	623	Speed and direction of storms Stationary and rotating equisigna	232	Bituminous coal, international conference	483 487 126
How tuning-up new and reconditioning old, pays	169	Supercharger in night tests, effect of	. 209 262	Black baking-enamel tests progress BLAKER, ERNEST, ON EFFECT OF BRAKE- DRUM HEAT ON MOTORCOACH TIRES	
How weight distribution affected oscil- lations Improved suspension and central	292	Thinking in terms of air Training men to fly	484	AS TESTED ON A DYNAMOMETER	529
chassis lubrication Influence of pneumatic tires on develop-	54	Weather When the long way round is shortest	232 164	Bodies	
ment Information that the factory should	569	Axle and Wheels Division, S A E		Effects of smooth highways and closed	
supply Light flexible bodies desirable	169 52	Activities	559	Handling Height and width of motorcoach Light flexible, desirable	418 36 52
Locks as theft preventives Manufacturer's reflections on the ser-	128	Changes in semi-annual meeting repor	t 9	Body-truck	350
vice field Materials, supercharging and fuel	298 624			Bolts and Nuts	
Mechanics should know correct adjust- ments	168		500 422	Finished and semi-finished	11
Needed relations between service sta- tion and factory	167	Rear, handling Suggested improvements in	418	T Wrench-head, and wrench openings	548 10
Operating cost and annual replacement Oscillation or pitching Percentage locked	290 131	Worm-gear	498	Bore and stroke ratios, effect of chang-	586
Popular conceptions of locking Power brakes receiving much attention	133	Worm-geared and worm-gears	470	Boring-Fixtures	
Present makes of universal-joints Production of gears 327,	629				
Radical chassis changes seem unlikely Results of operation	54 63	casting of	404	Operation	600 598
Saturation-point Shimmy tests on the 12-hp Renault	50 538	trucks	653		600
Studies of oscillation of leaf-springs Time for trading-in	501 63	motorcoach	519		598 d 403
Time saved by rebuilt-unit system Today and tomorrow	171 51 54	Baking enamel panels inspected Balance of six-cylinder engine	340 584	Keene)	525
Trend in steering, wheels and rims Trend to lower, and improved seats	52	Balancing supply and exhaust of air	175	Brake code and dynamic brake-tester	547
Trends of design Trends of the various present types Varnish over lacquer gives deep luster	336 623	Ball and Roller Bearings Division, S	AE		542
Varnish over lacquer gives deep luster Volatility tests for fuels What goes wrong with machine-tools	51 151		447 rt 9		
in production Why does it pivot	330 542	Ball bearing standardization	447		529
Will America copy foreign	623		447		269

Brakes		Chains	Co	nnecting-Rods	
Automotive-type, built on axles Brass rivets are preferred, why Causes and prevention of squeaking	547 500 267 267	Conveyor 244 Conveyor, can run vertically 325 Chamfering, testing, burnishing, and lapping gears	E	Counterbalanced	600 444 582 600
Concentric, sometimes squeak Different types described	542 268 439	lapping gears 423 CHANDLER, F F, ON SHIMMY AND TRAMP 443 Character of carbon deposits more important than quantity 648	S	simple one-piece for aeronautic en-	610
Grunting remedied by stiffening the drum Heavy, rigid, hard drums are quiet	269	Characteristics of human nature 108 Chase, Herbert, on Automobiles of Today and Tomorrow 51	Cor	ing-oil, viscosity and nsignee's right of notice of arrival of	249 568
Human limitations of pedal-pressure Light linkage amplifies vibrations Motorcoach 41.	268 43	Chassis			58
New safety code for Nomenclature extended	541 559	Improved suspension and central lubri-	Co	ntact Accelerometers	
Power, receiving much attention Properly directed lights as essential as Squeaking stopped by removing lining sector	54 105 269	cation 54 Numbering 129 Radical changes seem unlikely 54	G Cor	Gap-clearance	434 433 434
Torque-equalized Brakes (H H Allen)	542 439	Checking, advance in instruments for 475 Checking own with outside costs 145 Chemical compositions subdivision post 552	5 Co	ntainer System	
Brakes (John R Cautley) Brakes on motorcoaches Braking problem, factors in	439 43 439	Chemical compositions subdivision, new 553 Chicago Motor Coach Co, methods of 684 Chromium	4 (England's furniture-van, recom-	564 516
BREER, CARL, ON MANUFACTURER'S RE- FLECTIONS ON THE AUTOMOBILE SERVICE FIELD	298	Answers questions about plating 442	2	Now in use described Operation of	516 566 564
British aviation policy and air services BROCK, C A, ON CONVEYORS USED IN THE AUTOMOTIVE INDUSTRY 325,		Low carbon-content valuable in alloys 442 Chromium (Colin G Fink) CHURCH, ELIHU, ON SOME FREIGHT- HANDLING PROBLEMS OF NEW	_ 7	What, can do for freight transporta-	516
Bronze, aluminum, patents on Bronze for worm-wheels, suitable	471	YORK CITY 235	9	ntainers	
Bronzes for worm-gearing Brooks, D B, on QUANTITATIVE EFFECT OF ENGINE CARBON ON DETONA- TION Brumbaugh, A K, address	469 445 199	Clarkson, C F, address Cleanliness essential to first-class work 168 Clearance, results of insufficient wheel 47 Cleveland, motorcoach operation in 445 Clutch-facing sizes, revision of 559	8 7 H	Economic range of operating Loading and unloading	566 566 565 565
BUCHANAN, JAMES A, ON MOTOR-TRUCK TIRE AND ITS RELATIONS TO THE		Clutch nomenclature revised 555	5 Con	ntest Board of American Automobile Association, representative	342
VEHICLE AND TO THE ROAD BUCKENDALE, L R, ON AUTOMOTIVE WORM-GEAR	527 635	Coach-Truck-Railroad Session at Trans- portation and Service Meeting	Co	ntracts, motorcoach tire-mileage ntrols grouped for operator's con- venience	508 496
Bulbs, changing, requires refocusing and reaiming Burke, George W, on Viscosity and	101	Announcements 334, 436 Program 437	0	nversion at atmospheric pressure pro- duces naphthene	78
THE CONRADSON CARBON-RESIDUES OF LUBRICATING-OILS	249	Reviewed 518 Coal, bituminous, international con-	Co	inveyor Session at Production Meet	ing
BURKHARDT, OTTO M, ON CAUSES OF WEAR AND CORROSION IN ENGINES Burnishing, chamfering, testing, and		ference Coincidental locks (Charles M Manly and C B Veal) Color added to the color of the color	7	Announced Program Reviewed	199 201 325
lapping gears Bussey, C G, on Low-Cost Fleet- OPERATION	423 542	Coke production and benzol 248 Coking, overcoming the danger of 282 College, engineering 274	2 0	onveyors	
Buyers misled regarding car care By-laws, S A E, amendments to	172 562	College life, personal adjustments COLLIAU, VICTOR, ON METHODS OF FINISHING CYLINDER-BORES	3	Advantages of systems Casters present a difficult problem Chains	420 325 344
C CALKINS, C H, ON WORM-GEARS AND		Colors		Chains can run vertically Combined transportation and assembly	325 420
Worm-Geared Axles Cam-rollers, inspection of Cameron, C L, on Production of	470 366	Differentiation of fuels by Harmony of equipment of motorized	8	Construction details Control Cost reduction	350 346 414
AUTOMOBILE GEARS 327, Camshaft and spiral pump-gears	475 480	railroad train 490 Combustion-chambers, gage for check-		Double drive Drives	349
Canada, flying in Canadian farmers' wheat pool Candlepower, maximum beam, limited	234 363 13	ing 37: Come-backs, treatment of 30: Commercial testing laboratories, list of 18:	35	Floor-type body Sprockets for chain Transportation by 325, Typical installations	349 344 413 348
Carbon		Committees		Used as pace-makers Used in the automotive industry 325,	
Influence of remover Location of deposit, effect of Low values from different crudes	446 446 647	Ball Bearings Sectional, activities 44' Drawings and Drafting Room Prac- tice Sectional, S A E to be rep-	* 4		343
Quantitative effect on detonation Carbon deposition, influence of tempera-	445	resented on 12 Fundamentals of automotive freight	26 C	ooling	4.0
ture, fuel and oil on 166	642	transportation, special S A E 51 Local transportation and service meeting 53		Motorcoach engine Objections to use of oil ooling always limited by cylinder area	40 640
Carbon Deposits Character more important than quanti-		Production meeting, S A E 201, 33 Small Tools and Machine-Tool Ele-	33	in air-cooled engine cooling efficiency and fuel consumption	622
ty Most is from unburned fuel Nature of, affects detonation	648 648 646	ments Sectional Activities 339, 56 Representatives 34	42 C	of Wright Whirlwind engines ooling Systems	307
No, with heavy oil Over-feeding of oil a cause	73 649	S A E joint sponsor Special research on mechanical springs Activities 54	26	How high temperature affects Pockets in, effect of	56 58
Very little if any increase in Carbon-residues of lubricating-oils	273 249	Report by B Liebowitz 54 Standards, S A E, Activities 56	62 C	Unique arrangement cooling-water temperature, relationship	497 383
Carbureters		Semi-annual meeting Tractor meeting, S A E 33	35	ooperation in aircraft design (E P Warner)	507
Determining setting Fuels in, and tank may vary Performance at partial engine-load Study of, on engine	374 80 376 374	Common troubles with present head-	34 C	oordinating gear design and production methods (Perry L Tenney) oordination of transportation oordination of transportation services	111 602
Carburetion and manifold design as re lated to engine performance (Ha		lighting equipment (Alfred W Devine) Commutating poles used in gasoline-	29 C	orona tests of ignition cables (F I	361
H Timian) Casters present difficult problem Castings, two inspection fixtures fo		Commutator, condensite and bakelite for Compass, compensation of 23	30 C	Haushalter) corrosion, causes of, in engines cost of operation and economic life of motor trucks (Eugene Power)	657
Causes and prevention of squeaking brakes (F C Stanley)	g 267	Compression and rotor-speed, effect of 25 Compression efficiency and delivery rate 25 Compression pressure, fuel nozzle and	56	Costs	0.0
Causes of wear and corrosion in en gines (Otto M Burkhardt) CAUTLEY, JOHN R, ON BRAKES	657 439	Compression-ratio, starting affected by	73 4 74	Aircraft engine Checking own, with outside	226 145
Center of gravity in engines, stability of Center of gravity of motorcoache	f 584	Concerted initiative in education 23	887 227	Commercial airplane builders need re duction Comparison of automobile prices and	617
lowered Centrifugal casting of connecting-ro- babbitts Centrifugal superchargers	35 d 404 389	Connecting-rod babbitts, centrifugal	69 304 104	operating Depreciation of motor trucks Fleet operation	64 60 62

Costs (Concluded)		Current		Directional signals transmitted from	10
How lower aircraft-engine, will come 1 Miscellaneous charges Motorcoaches greatly reduce per mile operation 5	61	Induced in crossed loops Currency systems, world Cushion-ball universal-joint, new		Displacement superchargers Distributor-rotor electrode Division of dynamic forces Double drive on conveyor 3	89 47 89 49
Operation, and economic life of motor	00	Cutters	020	Drain-Plugs, Crankcase	
Operation of 2-ton trucks Reduction a basic reason for air- cooled engine development	64	Set by micrometer measurements	326 599 548	Report at summer meeting Revised 5	9 553
Repairs for motor trucks Results of automobile operation	60 63 237	T-slots Cylinder-Bores	020	Drawings and Drafting Room Practs Sectional Committee	ice
Standardization as a reducer Sundries for motor trucks	487 60 60	Finishing methods	85 88		342 126
	566 468	4 years of lapping Honing Lincoln 87,	86 90 87	Drift	
COULOMBE, J C, ON ELIMINATING DILU- TION BY THE APPLICATION OF	282	Lapping of Results obtained in lapping	84 90	Measurement and sextant observa-	163
Council Meetings, S A E	202	Cylinder bores: should they be honed or lapped	84	Drill-press converted into milling-ma-	163
September	342	Cylinders			408
Counterbalanced connecting-rods (K D	562	Cooling always limited by area	307 622		000
	444 588	Engine characteristics as affected by crankcase and, arrangement Design gives high efficiency Hone for lapping engine	578 613 408	Four-direction operation Oil-holes in crankshafts	622 407 406
Causes of difference in degree of	363	Lengthwise disposition, effect of Machine for machining engine	587 401	Drivers	
Lubricating oil into gasoline Rubber decreases as tension is in- creased	280 361	Three blocks have independent heads Types of construction When and how to regrind	493 583 184	lamp adjustment	101 59
CRANDALL, BRUCE V, ON RAILROAD FREIGHT-TERMINAL 518, CRANE, H M, ON ENGINE CHARACTER-	601	Cylinder-temperature control by evaporation (A G Herreshoff)	265	DRUESNE, E, ON OSCILLATION EFFECTS	344
ISTICS AS AFFECTED BY CYLINDER AND CRANKCASE ARRANGEMENT CRANE, H M, ON HEADLIGHTING	578 100	Davison, F Trubee, address	195	WITH LOW-PRESSURE TIRES Duralumin worm-wheels Dynamic forces, division of, in engine Dynamical problems of spring-suspen-	538 471 589
Crankcase drain-plugs revised Crankcase-Oil Contamination	553	DEBBINK, HENRY L, ON MAINTENANCE OF MOTORCOACH EQUIPMENT Debts, payment of war	536 109		545
Analysis carried out by Bureau of		Deep oil-well drilling practice Delbridge, T G, on Seek Cracking	622		
Standards Comparison of results from both surveys	660	DETONATING FUEL	75	tested on	529 272
Cooperative research instituted by the society		Depreciation		E	
Criterion for tracing some causes of, by Ingredients found in ash Influence of various factors on Silica-iron-oxide relation Sources of Study of large number of samples yields results	661 662 662 275	Methods of, in motor trucks Motor truck costs Wear and, with gasoline-electric drive Derivation of gap-error formula Design and material requirements of motorcoaches	181	Earnings of air-lines in Europe are small Eastern system of hand signals Economic life of motor vehicles	337 654 61 566
Viscosity, effect on accumulation of iron oxide	668	acteristics	134	Fox) Economical and rapid production of all-	529
Crankense Oil Dilution	275	Deconution		metal airplanes and seaplanes (Dr Adolf Rohrbach)	193
Crankcase-Oil Dilution Differences of, for various groups	677	Nature of deposits affects Quantitative effect of engine carbon on	646	Economics .	
Dirt and, effect of Eliminating, by the application of heat Factors influencing accumulation of water Kerosene unsuitable as diluent	279 282 679 271	Development of airports Development of the Wright Whirlwind type J-5 aircraft engine (E T Jones) 192, 303,	616	Gold production and In engineering education Influence of degree of organization Science and philosophy	251 251 251 577 190
Motorcoach Oil-rectifiers and Principal sources of	278 275 277	TROUBLES WITH PRESENT HEAD- LIGHTING EQUIPMENT	25	Economics of motor-vehicle transporta- tion correlated with steam and electric railroads (G L Wilson)	519
Short drives in cold weather Some effects of, on oil Suggested remedy for	283 658 270	CYLINDER-BORE LAPPING	8	Economy	
Tractor-lubrication problem may be solved by prevention		Dew-Point		Excess may defeat efficiency Growth of a new world	179 577
Crankcases		Direct observations Static method Static phase-change method	15 15 15	Operation of motorcoach Powerplant	37 225
Aluminum, forged in halves Drain-plugs	61	1 Dew-point observations, direct	15	Chity of fortune	577
Drain-plugs revised Engine characteristics as affected by	553	ner) Differentiation of fuels by colors	44	0	227
cylinder and, arrangement Lubricating oils Machining by grinding recommended	578 10 1 40	charger	38	selection in professional	251 202
Water and acid Crankshaft grinding-wheels and baths	270 18	ADMINISTRATOR'S POINT OF VIEW		4 Education in maintenance management needed Educational bases	521 509
Crankshafts		Dinners Annual, 1927, announced	53	Effect of brake-drum heat on motorcoach tires as tested on a dynamometer	r
Construction of two-piece Grinding-wheels and baths	61	Warner, E P	19		е
Oil-hole drilling in Types for six-cylinder engine	40 58	ments of Direct-reading method of inspection	6 n	6 McKee)	356
Criticism of head-lamp construction CRITTENDEN, E C, ON FUNDAMENTAL PRINCIPLES OF HEADLIGHTING AND	D	Directional Effects	36	Compression and delivery rate of super-	
GLARE CUMMINGS, H K, ON ANTI-FREEZE SOLU- TIONS AND COMPOUNDS 93, 247 CUNNINGHAM, W J, ON MOTOR-VEHICLE AND RAILROAD TRANSPORTATION ECONOMICS OF COORDINATION	, 63 E	Graphical representation of calcula	22 21 21 20	charger Constant-pressure engines more efficient Cooling, of Wright Whirlwind Cylinder design gives high Excess economy may defeat	256

			4.0		
High, at small angles of universal- joints	626	Cooling Cooling efficiency of aircraft	40 225	Stability of center of gravity 5	38 84
Laboratory tests show high super-	258	Cooling-water temperature, relation-	383	Starting tests, additional	83
National, greatly increased	109	ship of Cost of aircraft	226	Story of the Wasp and the Hornet 1	92
Present engines thermally inefficient Use of single type of motorcoach in-	57	Cost reduction a basic reason for air- cooled development	621		74 78
creases	684 472	Counterbalanced connecting-rods	444	Supercharging 2	22 85
	***	Counterbalancing Crude manufacturing methods	588 580	Supercharging maintains power at	
Eight-Cylinder Engines		Curves of limiting speed Decrease in oil-consumption noted	589 273		54 92
	590	Dependability of aircraft	226	Survival by high speed only 6	19
Types Varieties	579 590	Design changes may reduce wear Details of specially-designed 175-hp.	53 492		20
EISINGER, JOHN O, ON PROGRESS REPORT		Determination of working speeds of		Tendency to increase power not sound 2 Test measuring-apparatus and its	23
ON ENGINE-STARTING TESTS Elastic problems of springs	79 545	aircraft, during the war Determining ideal performance	374	operation 3	82
ELDRIDGE, M O, ON NEW SAFETY CODE FOR	541	Development of the Wright Whirlwind type J-5 aircraft	192	Testing-forms, new 5	56
BRAKES Electric-current powerplant and distri-		Diesel development	440	Thermo-vapor cooling system 2 Three cylinder-blocks have independent	195
bution Electric furnaces in operation	381	Difficulties of six-cylinder Dilution	579 275	heads	93
Electric railway company, how fares the	445	Dirt and dilution, effect of Disposition of cylinders lengthwise,	279		95
bus in Electric vehicles, sphere of	264	effect of	587		885 836
Electrical Equipment Division, S A	E	Division of dynamic forces Durability of aircraft	$\frac{589}{226}$	12 and 6-cylinder V aircraft	241
		Eight-cylinder types	579	Two-cylinder-opposed 578, I Type may not be final	53
Activities 452, 547, 554, 555, Changes in semi-annual meeting report	9	Enclosed valve-gear quickly accessible Estimation of progress made	$\frac{612}{224}$		588 583
Electro-control unit, Fraser	67	Evaporative-cooling, advantages of Exhaust-manifold logical place for at	53	Uniform operating-temperatures de-	78
Electrode, distributor-rotor Elevating grader needs positive power	547 652	taching retort	277		197
Eliminating dilution by the application	282	Finely atomized fuel gives charge of more uniform quality	5	V-1400 model lighter and more power- ful	242
of heat (J C Coulombe) Emergency landing-field lighting	312	Four double-opposed pairs	590	V-type aircraft without reduction gears	242
Emergency landing-fields EMRICK, CLYDE, ON TRAINING MEN TO	230	Four speeds afforded in both directions. Fuel economy may become big problem			582 590
FLY	444	Fuel nozzle, compression pressure and economy	73	Vertical four-cylinder Very little if any increase in carbon de-	579
Engine Division, S A E		Fundamentals of gasoline-electric	e	posit	273
	EEC	drive Fundamentals of the gasoline	582	Wasp and Hornet radial air-cooled 192.	584 609
Activities 547, 553, 556, Changes in semi-annual meeting report	9	Gasoline, in construction field Have only begun developing speed pos	608		271 221
Engine characteristics as affected by		sibilities of aircraft	619	Wright Whirlwind	
cylinder and crankcase arrange- ment (H M Crane)	578	High average operating-temperatur and car operation	81	Development of type J-5	307 303
Engine overhauling in fleet maintenance (W S Penfield)	183	Higher temperature does not increas mileage	e 57		308
Engine requirements of interurban motor- coach service (L P Kalb)	179	How acceleration and idling tests ar	e 376	Further development	306
Engine session at aeronautic meeting	191	made How high temperature affects coolin	g		305
Engine-Sleeves		systems How lower cost will come	56 193		234
Finish-boring operation	351	Influence of carbon remover Influence of cranking speed on startin	446 g 3	Equipment, laboratory technique, and	
Inspection details	353	Jacket passages too small in some	83	methous Equisignal transmission	216
Inspection of Knight 328, Method of measuring hardness	351	Kerosene, with no water in head Laboratory layout and equipment	83 380		
Engineering		Large moderate-speed, preferable for motorcoaches	181	Equisignals	
	274	Location of carbon deposit, effect of	446	Transmission	216
College Economics in education	251	Lubrication Maintenance of aircraft	592 226	Transmission of rotating Estimating, method of	218
Post-scholastic training Rubber as a material for mechanical	252 540	Mounting of supercharger with Need data on performance of geared	262 621	Estimators, increasing number of	146
Teaching	287 247	Nine-cylinder radial 24	3, 580	Ethylene-glycol and glycerine-alcohol sol-	21
Techniques of education Engineering college	274	Noise and knocking tendencies Numbering	389 129	utions Europe, stabilization of	97 109
Engineering Division of National Re		Objects of previous and present star ing tests	t-	European trend of automobiles	624
search Committee, representative	012	Oil and gas, for oil-well pumping	634	Evaporation	
Engines		Overcoming the effect of heat of valves	591	Cylinder-temperature control by	965
Accessories grouped in removable unit Accuracy of metal temperatures as		Overhauling in fleet maintenance Packard 12	183 579	Factors governing effective	265 277
sured	82	Pathology of internal-combustion	661	Evaporative-cooling, advantages of	53
Advance in manufacturing methods Air-cooled, in naval aircraft 191, 221	582	Pinging depends upon particular Pockets in cooling systems, effect of	82 f 58	Exhaust heating in motorcoaches	176
Air-cooling versus water-cooling Air-pressure and fuel injection	320 73	Prediction of performance Present and expected mean-effecti	159	Exhaust-manifold logical place for at- taching retort	277
Aluminum crankcase for aeronautic	0,	pressure	74	Expansion of terminal facilities	567
forged in halves Are kept running in emergency land	611	Present, thermally inefficient Probable future development	245	Exports, iron and steel	509 687
ings Atmosphere	233 649	Problems involved and materials use Procedure for testing wear	d 244 278		519
Attendu heavy-oil	72	Production of aircraft	226		010
Balance of six-cylinder Bases of comparison	584 585	Progress report on starting tests Propeller and, performance linked u	p 620) F	
Better airplane performance demon strated	615	Proper size for motorcoaches Pumping loss	186 583	Facing and inletting bearing edges	600
Block type of aircraft, shorter an		Quality of fuel mixture	585		107
more rigid Carbureter performance at partial loa		Quantitative effect of carbon on di tonation	445	Factory	
Carburetion and manifold design a related to performance	546	Radial and in-line aircraft Reasons for popularity of six-cylinde	223 er 581		168
Causes of noisy	590	Requirements of aircraft	224		107
Causes of wear and corrosion in Changing bore and stroke ratios, effec-	657	Requirements of interurban motorcoa service	175	Traveling instructor from, would pay	
of	586	Results of maximum explosion-pressu tests	379	FAGEOL, F R, ON FUNDAMENTAL REA-	
Characteristics as affected by cylinder and crankcase arrangement	578	Roots supercharger for Liberty-12	25	COACH DESIGN	. 33
Combination thermosiphon and con densing system	296	Rotatable overhaul stand Sales volume follows good performan	598 ice 618		105
Compression-ratio affects starting	4	Scavenging pressure and variable jection-time		Farm equipment sales	320
Compression retention and temperature Connecting-rods	582	Silica content of 1926 samples indicat	tes	Farming	363 58
Constant-pressure, more efficient Construction of two-piece crankshaft	in 58	little cause for wear Simple one-piece connecting-rod used	in 671	terpreted	543
aeronautic Controls grouped for operator's con	610	aeronautic	616	D. EAVARY, E, ON SIX-CYLINDER TRUCK-	111.43
venience	496	Single sleeve-valve Six-cylinder truck		Federal-aid highways	161

F	elloe and felloe-bands, solid-tire fields and requirements for automotive equipment in highway building (T Warren Allen)	9 650	Frequency of sound determination and filtering FRITSCHE, CARL B, ON ARCTIC EXPEDITION	465 537	Fraser electro-control unit Fundamentals of Running at most economical speed Use of bakelite and condensite	67 65 68 69
	litering and frequency of sound de- termination	465 178	Froesch, Charles, on Rubber as an Automotive Material. Front-end drive motorcoach	541	Wear and depreciation Gasoline engines in construction field	68 608
	'inancial position of France 'inishes, durable colored automobile upper-structure	53	Fuel Consumption	38	Gasoline volatility Gasoline-water mixtures	22
F	inishing cylinder-bores (A R Fors) inishing cylinder-bores, methods of	85 88	Cooling efficiency and, of Wright		Gassing of motorcoach passengers Geared-engine performance, need data on	40 621
F	INK, COLIN G, ON CHROMIUM TRESTONE, FLOYD A, ON TECHNIQUE OF	442	Whirlwind engines Temperature does not affect, in air-	307	Gear Production Session at Product	
	SOUND MEASUREMENTS 438, ITCH, T A, ON TESTING OF GASOLINE	461	cooled engines Fuel economy may become big problem	620 57	Meeting	ton
	AND OF OIL, OF ENGINES AND OF STEEL	444	Fuel injection, air pressure and Fuel-mixture, steam injected	73 296	Announced	200
	'itting the machine-tool to the job (O C Kavle) 330, FITZ. E M. ON LOW-COST FLEET-OPERA-	399	Fuel nozzle, compression pressure and economy	73	Program Reviewed	201 326
	TION Cixture for straightening and aligning	542	Fuel vacuum-tank mountings revised	555	Gear-ratio, greater power permitted by increased	76
	connecting-rods Fixtures and tools for service-station	600	Fuels Admixture distillation - characteristics	26	Gears	
	maintenance work	595	Air distillation methods Ample reserves still available	156 57		475
1	Flat-Rate System		Audibility anti-knock tests and knock- intensity evaluation		Automobile production Camshaft and spiral pump Chamforing taking humiding and	327 480
	Capability and compensation of me-	299	Car materials and supercharging Dew-point by the static method	624 154	Chamfering, testing, burnishing, and lapping Coordinating design and production	423
	Hour-rate pay Inducements to capable mechanics	521 301	Differentiation by colors Direct dew-point observations	78 154	methods Discussion of noise	111 326
	Piecework versus Treatment of come-backs	301	Distribution index Equilibrium-air distillation	26 156	Equipment for inspection Forging and preliminary heat-treat-	411
	Fleet maintenance (J F Winchester)	520	Ethyl-fluid admixtures Finely atomized, gives charge of more		ments Forms for inspection	426 411
1	Fleet Operation Costs of	62	uniform quality Gasoline-benzol mixtures Gasoline-water mixtures	21 22	Gear-steels and the production of automobile 326,	422
	Engine overhauling in maintenance Inadequacy of unit	183	High percentage of sulphur in, effect			409
	Maintenance-shop uncovers weak points	185	Influence of, on carbon deposition Influence of, temperature and oil on	166	Production of automobile 327, Production of rear-axle	422
	Floodlighting		carbon deposition Many would use a special	642	Requirements of satisfactory hob gen- erating-machine Spiral, and gearsets function well	475 56
•	Areas of water	315	Method of evaluating knock-intensity Miniature pipe-still method	155	Spiral pump and camshaft Steels and the production of automo-	480
	Obstruction lights and runway markers	314	Most carbon deposit is from unburned Operating volatility	161		422 424
	Floodlights		Other methods of evaluating knocking characteristics	21 585	Transmission V-type aircraft engines without re-	426
	Large 180-deg Recent new units	314 316	Quality of mixture in engines Relative power Results of maximum explosion-pres-	22	duction Gearsets and spiral gears function well	242
	Small Wabbler mechanism of the B B T	316	sure tests Seek cracking process for production	379	Gear-Steel	
	unit Floor-type body conveyor	317	of non-detonating Spark-advance requirements in mix-	75	Final heat-treatments	427
	Flying in Canada Flywheel-housing standard clarified	234 555	ture-ratio tests Starting volatility	25 159	Forging and preliminary heat-treat-	426
	Flywheels, starter ring-gears and Fog most important summer problem in	478	Static phase-change method Study of charge distribution Sulphur	154 378 280	Fracture testing of Grain size of Production of automobile gears	428 428 422
	aviation FORKER, A H G, ON FUTURE OF COMMER- CIAL AVIATION	232	Tank and carbureter, may vary Testing apparatus employed for anti-	80	Selection of Warpage	426 427
	Foreign trade, our Fors, A R, on Finishing Cylinder	109	knock Vapor-pressure ratios	17		
	BORDS FORS. A R., ON TWO ENGINE-CASTING IN-	89	Variable mixture-ratio Volatility tests for automobile 151.	$\frac{24}{324}$	W G Hildorf) 326, Generator mountings	422
	Four years of cylinder-bore lapping		Fundamental principles of headlighting and glare (E C Crittenden)	101	Generators, needed improvement in charging	56
	Fox, L W, on Economic Solid-Tire	529	Fundamental reasons underlying mod ern safety coach design (F F	3	German situation in aviation Germany	337 687
	OPERATION France, financial position of Fraser, E M, on Fundamentals of	178	Fageol) Fundamentals of automotive freigh transportation special committee	T.	GIBBONS, W A, ON RUBBER AS A MA- TERIAL FOR MECHANICAL ENGINEER	-
	GASOLINE-ELECTRIC DRIVE Fraser electro-control unit	65	report Fundamentals of gasoline-electric drive	517	Glare	540
	FRAUENTHAL, A H, ON INSPECTION ALONG THE LINE 328	. 364	(E M Fraser) Future of commercial aviation (A H (65	Fundamental principles of	101
	FREDERICK, W A, ON SINGLE SLEEVE VALVE ENGINE	538	Fokker)	441	Increases with difference of brightness Ready alibi	s 103 104
	Freezing-point, how concentration af fects	94	Gage for checking combustion-chamber	s 372	Glare-effect and angle, relation between	
	Freight		Gap-clearance, contact-accelerometer Gap-error formula, derivation of Garage, profitable equipment for moto	433	Glycerine	
	Congestion in cities Consignee's right of notice of arriva	604	trucks Gardiner, Arthur W, on Roots-Typ	527	Alcohol and, about equally effective a anti-freezing solutions	s 94
	of shipment Facilities for heavy materials	603	AIRCRAFT-ENGINE SUPERCHARGER Gardiner, Lester D, address	253 199	Neutral, does not attack rubber	640 96
	Handling problems of New York	233		333	Glycerine-alcohol and ethylene-glycol so lutions	97
	Motor-truck's place in transportation	230 n 513 513	Gasonino	21	Gold production and economics Goniometer described	251 214
	Railroad terminal Results of installing store-door service		Cracking of lubricating-oil into	280	Grain size of steel	428
	Saving cost of boxing Scientific transportation	23 51	Engines in construction field	60	Cuindian	
	Trap-car system What the container can do for trans	60	Testing Volatility	44	Recommended for machining crank	
	portation Freight-handling problems of New Yor	51 k	Gasoline-benzol mixtures	2 2	Tendency to eliminate valve	405 184
	City	23	Gasoline-Electric Drive		Grinding-wheels, crankshaft, and baths Ground-return wiring system 452	
4	Freight-Handling Session at Tran tation and Service Meeting	spor	Armature-reaction Arrangement of armatures and field	6		
	Preliminary announcements 33	4, 43	Control of speed and torque	6 6	7 Application to	146
	Reviewed Freight-terminal, railroad	51 60	Efficiency Elements of direct-current electric	al 6	Non-productive labor Description of system adopted	145 145
	French situation in aviation	33	7 machines	6	6 Principle	146

21

76

Growth of a new world economy Grunting of brakes remedied by stiffen-	577	Heat-Treatments		Importance of tire service in motor-	
ing the drum GRUSE, W A, ON INFLUENCE OF TEMPER-	268	Gear steel		coach and truck operation (J M	569
ATURE, FUEL AND OIL ON CARBON DEPOSITION 166,	642	Final Preliminary	427 426	Imports	
100,	012	Molybdenum steels Proposed new	16 556	Iron and steel exports and	687
Н		Helical timing-gears	477	Outlook for large	287
HALE, J E, ON BALLOON TIRES FOR HEAVY VEHICLES		HENDRICKSON, N E, ON STUDIES OF THE OSCILLATION OF AUTOMOBILE LEAF-		Improvements in head-lamps (R N Falge)	105
HAMMOND, J G, ON HONING CYLINDER-	45	SPRINGS HERRESHOFF, A G, ON CYLINDER-TEM-	501	Improvements in shop practice of motor trucks	62
Bores Hand signal	90 654	PERATURE CONTROL BY EVAPORA-	265	Inadequacy of unit in fleet operation Income, American	62 99
Hand Signals		High average operating-temperature and engine and car operation (Alex		Increased gear-ratio permits greater power	76
	0 = 1	Taub and L P Saunders) High-performance small car here and	31	In once almost annual to the state of the st	146
Eastern system Western system	654 654	abroad (Thomas J Litle, Jr) 539, Highway transportation's social aspect	623	Indicator	
Hardness, method of measuring, of cast- ings	351	(Judson F Lee)	540	Air-speed	232
ings HARDY, F I, ON MOTOR TRUCK'S PLACE IN TRANSPORTATION	515	Highways		Industrial achievement	231 594
Hauling equipment for motor trucks, profitable	527	Cannot duplicate road conditions in		Industrial application of tractors (William Parrish)	058
HAUSHALTER, F L, ON CORONA TESTS OF IGNITION CABLES	361	laboratory Detroit traffic	384 568	Influence of temperature, fuel and oil on carbon deposition (S P Marley,	000
Head-lamp strength and rigidity	551	Dynamometer tests substantiate road	272	C J Livingstone and W A Gruse)	GAS
Head-Lamps		Effects of smooth, and closed bodies Federal-aid	580 161	Injection-time, variable	74
Application of test equipment	123	Fields and requirements for automo- tive equipment in building	650	Inspection	
Bulb changing requires refocusing and reaiming	101	Location engineering Motor-truck tire and its relation to	234	Along the line 328,	
Construction Criticism of construction	10	Opportunity for motorized plow	527 651	Baking enamel panels Benefits of service	36
Details of construction studied Illumination research	205 122	Theory and method of the New Haven Railroad's operation 518		Cam-rollers Details of engine-sleeve	360
Improved construction necessary Improvements in	104 105	Three-lane two-way	252 238	Equipment for gear Forms for gear	41
Method of survey described Nomenclature	30	Tractor needed for wheeled scrapers Transportation's social aspect	651	Gage for checking combustion- chambers	375
Simplicity an important feature Strength and rigidity	101	HILDORF, W G, ON GEAR-STEELS AND THE		Items on general sheet of motorcoach Judgment by sight and sound erratic	68
Test equipment to be used Variations in beam-depth	551 122	PRODUCTION OF AUTOMOBILE GEARS 326,		Knight engine-sleeves 328, Making use of elementary principles	35
	31	HILL, J B, ON SEEK CRACKING PROCESS FOR PRODUCTION OF NON-DETONAT-		of radio amplification for Methods and means used for small-	32
Headlighting		Hob generating-machine, requirements	75	Motor-car production, human element	409
Administrator's point of view Characteristics of human nature	104 108	HOFFMAN, A H, ON SELECTION OF AN	475	as applied to Production-line	329
Compromises in Difficulties of choosing test-object	341	Hone for lanning engine-cylinders	542 408	Ratios and averages useless in Some new devices shown	32
Factors in Fundamental principles of	107	Honing cylinder-bores (J G Hammond) Honing Lincoln cylinders (O E Hovey) Honing of cylinder-bores (H C Miller)	90	Speed versus care Stop-watch method used mainly in	369
Irritation of driver a cause of poor adjustment	101	Horing of cylinder-bores (H C Miller) Hornet and Wasp radial air-cooled aero-	07	bench operations Superiority of direct-reading to plug-	36
Practical application needed Relation between glare-effect and	29	HORNING, H L, ON TRENDS OF AUTO-	609	gage method Trips	36
angle Research develops data	204 203	Horse-drawn vehicles at terminals	336 235	Aeronautic meeting 119, International Harvester Co	
Safety and comfort demand action Troubles with present equipment	100	Hour-glass type of worm	264 472	Nash Motors Co Transportation and service meeting	33
Visibility determined by consensus of opinion		CYLINDERS CYLINDERS	87	Tellow Truck & Coach Mfg Co	33
Vision depends on an erratic mental operation	103	How fares the bus in electric railway company (Walter Jackson)	445	Two engine-casting fixtures 328, Why classified as indirect labor	36
Visual fundamentals in problem	$\frac{102}{203}$	How I fly at night (Wesley L Smith)	999	Why time-studies are valuable Inspection along the line (A H Frauen-	36
Headlighting (H M Crane) Headlighting from the administrator's		LUBRICATION	450	Inspection of Knight engine-sleeves (J	36
point of view (W L Dill)	104	HOWELL, K J, ON SHIMMY AND TRAMP Human element as applied to inspection	443	328,	
Headlights		Todd) Todd)	329	Inspection Session at Production Meet	ting
Control of light demands accurate ap-		Human limitations of pedal-pressure on brakes	44	Announced Program	20
Glare Glare		HUNT, J H, ON FACTORS IN HEADLIGHT-	107	Reviewed	32
A ready alibi Increases with difference of bright- ness		HUTT, A E, ON NEEDED RELATIONS BE- TWEEN SERVICE STATIONS AND		Inspection Trips	
Properly directed as essential as		Hydraulic system for applying pressure	107	Aeronautic meeting 119, Production meeting 121, 200, 329.	19
Scientist's point of view	105	Hydrometers needed for solutions, simple	250	Transportation and service meeting	
Self-protective feature of adjustable Types of, compromise compared Work of steering	341	Hypoid-gears	472	Instrument for measuring surface finish	43
Work of steering committee	106	Ice, accumulation of, on airplanes	000	by reflected light (C S Stark) Instrument mountings revised	48
Heat		Idling tests are made, how accelera-	233 376	Instruments	
Brake-drum, effect of, on motorcoach tires	529	Ignition	010	Advance in, for checking	47
Eliminating dilution by the applica-	282			Elements used and their hook-up for measuring surface finish	48
Overcoming the effect of, on valves	591	Battery and magneto available Lock, another type of	495 136	Mountings revised Sound-intensity measurements	56 46
Heating		Ignition Cables		Insurance	
Air from cooling-fan in motorcoaches	176	Causes of difference in degree of cracking of rubber-covered	000	Aviation	48
Fundamental requirements	176	Corona tests Description of apparatus for corona	363 361	Life, and savings Rate an index of safety	37
method of supplying heat in motor- coaches	170	testing Preparing for corona tests	362	Intake-manifold valve, lock control of Integrated service at Cincinnati	27
Requirement per seat in motorcoaches Sources and methods of obtaining	9.77.5		362	Intensity, units of sound, and loudness Interleaf-friction effects on oscillations	46
Heating and ventilating of motor-	175	Illumination Airways and landing-fields	***	on oscillations	50
coaches (L C Josephs, Jr) Heating unit	173	Head-lamp research	$\frac{197}{122}$	International conference on bituminous	40
	462	Impact tests	527		57

Vol.

Mak

Mar

M

Iron and Steel Division, S A E, activities 125, 207, 450, 553, 554, 555,	556	Engine-cylinders, hone for Four years of cylinder-bore	408	Low-cost-fleet-operation (C G Bussey, R R Rutherford, E F Rondot, and	
Iron and steel exports and imports	687	Results obtained in, cylinder-bores Lapping of cylinder bores (F N	90	E M Fitz) 5	42
Iron Oxide		Thiefels) LARDNER, S R, ON DIESEL-ENGINE DE-			10
	662 667 662	VELOPMENT Leaf-Springs	110	Effect of addition of kerosene on oili- ness of oils	56 60
Viscosity, effect of, on accumulation Irritation of driver a cause of poor ad-	668	External friction and fatigue effect on oscillation	502	Mounting of test bearing 3	57 59
	101	Interleaf-friction effects Interleaf lubrication and effects of	502		60
J		"nip" Number of movements per mile	503 504		10
Jacket passages too small in some en-	83	Rust and tight shackles effects Starting friction	503 503	Lubrication	
Jackson, Walter, on How Fares the Bus in Electric Railway Com-		Stresses in, experimental determina-		Engine 5 Experimental and mathematical studies	92
JEHLE, FERDINAND, ON LABORATORY	445	Studies of the oscillation of automo- bile			54
JEHLE, FERDINAND, ON LABORATORY TECHNIQUE, METHODS AND EQUIP- MENT	373	Leather V-belts, correct angle of LEE, Judson F, on Highway Transpor-	547		54
JONES, BRADLEY, ON AERIAL NAVIGATION JONES, E T, ON DEVELOPMENT OF THE WRIGHT WHIRLWIND TYPE J-5		TATION'S SOCIAL ASPECT Legislation, new aviation acts LEIPERT, A H, ON TOOLS AND FIXTURES	540 485	thickness Interleaf, and effects of "nip" 5	56 03 153
JOSEPHS, L. C. JR., ON HEATING AND		FOR SERVICE-STATION MAINTE-			155
Journal-bearing lubrication (H A S Howarth)	453	Length of life and cost of worm-gearing	468	Work of Beauchamp Tower 4	39 154 169
Journal Bearings		committee on mechanical springs Life insurance and savings	544 372		
Developed shape of a film Experimental and mathematical	458	Lighting	012	AIRPLANES 197, 3 Lyon, C S, on Merchandising Motor-	
studies of lubrication Later testing-machine, Kingsbury	454	Airplane	318		527
Oil viscosity, effect on friction Professor Kingsbury's machine	457 455	Airport beacons and boundary lights Airports	314	Making C A on French of mile Approve	
Work of Beauchamp Tower Journal deflection, influence of, on film	454	Airway development Airways, airports and airplanes	310	OF KEROSENE ON THE OILINESS OF	356
thickness Judgment by sound and sight erratic	456 329	Cluster beacons Emergency landing-field	311	MACCRACKEN, W P, JR, ON SAFETY, COST	200
Judicial K	71	Fundamental principles of, and vision Maximum beam candlepower limited National Air Transport route	n 102 13 319	CIVIL AVIATION 1	196 11
KALB, L P, ON ENGINE REQUIREMENTS OF INTERURBAN MOTORCOACH		Obstruction lights, runway marker and flood 24-in. beacon		Machine-Tool Session at Producti	ion
SERVICE KAVLE, O C, ON FITTING THE MACHINE-		Lighting Division, S A E			200
KEENE, CHARLES G, ON BOSTON'S TRAFFIC		Activities 551, 552		Reviewed	201 330
RELLETT, W P, ON SCIENTIFIC TRANS-		Changes in semi-annual meeting re	10	Machine-tool standardization	339
PORTATION 516, KENNEWEG, C H, ON THERMO-VAPOR ENGINE-COOLING SYSTEM	295	Lighting equipment for airways, air ports and airplanes (H C Ritchi	e	Machine-Tools	
	233	Lights, neon	7, 30	babbitts	404
Kerosene Effect of addition of, on the oiliness of		Lincoln cylinders, honing Linforth, J M, on Importance of Tir	E 8	In Great Britain, American	248
lubricating-oils Unsuitable as a diluent	356 271		9, 56	9 Rotating connecting-rod boring ma-	401
Kerosene engine with no water in head KETTERING, C F, ON SCIENTIFIC RE-	83	Lining sector of brakes, squeakin stopped by removing List of commercial testing laboratories	26	9 Special versus combination	330
SEARCH Keys, Woodruff, standard proposed	537 16	Litle, Thomas J, Jr. on High-Perform ance Small Car Here and Abroa	f-	production with, in automobile	330
Kingsbury, Professor, machine for test- ing journal-bearing lubrication		Livingstone, C J. on Influence	9. 62	3 Machining	
Knock-Intensity	100	TEMPERATURE, FUEL AND OIL O		Crankcases by grinding recommended Transmission cases	405
Code	19	Loading and unloading containers	56	5 Mail, express and baggage handled by	
Evaluation and audibility anti-knock		Locked cars, percentage of	13		519
Method of evaluating Other methods of evaluating char-	20	Locking Habit forming is needed	13	Maintenance 4 Aircraft engine	226
acteristics Knocking tendencies in engines	21 389	Popular conceptions of car	13	3 Airway	488
	903	Locking device, early forms	13	Cost of replacement and, of motor	64
L Taban and Marking of many house have		Locks	4.0	Distribution of motorcoach	685 521
Labor, application of group bonus to non-productive	145	Classification Coincidental 12 Combination fixed steering-wheel	13 17, 13 13	Engine overhauling in fleet	183 520
Laboratories		Control of intake-manifold valve Desirable and undesirable chara	13		185
Commercial testing, list of Cannot duplicate road conditions in	185 384	teristics Having group-1 and group-2 feature	13	o Fleet standardization and	536 527
Layout and equipment Small work is segregated	380	Ignition, another type of Objections to coincidental, analyzed	13	6 Motorcoaches	576 683
Laboratory technique, methods and		Rules for judging Steering-post, another form of fixed	13	Results of proper motorcoach	687
equipment (Ferdinand Jehle) Lacings, radiator, to be revised Lamps, incandescent, focusing type	558	Theft preventives Transmission	12	8 motorcoach Standardization of motorcoach equip-	536
Landing-fields	559 484	Another form of Simple form	13	6 Territorial inspectors make current re-	
$Landing ext{-}Fields$		Various types described Long-distance versus terminal trucking	13 g 23	c Tools and natures for service-station	521
Emergency Lighting of emergency	230		D #1	When and how to regrind cylinders	184
LANNEN, JOSEPH, ON APPLICATION O GROUP BONUS TO NON-PRODUCTIV	F	Current distribution	21	Maintenance of motorcoach equipment (Henry L Debbink)	536
LABOR	145	Commont in June 3 in account	2:	Maintenance Session at Transporta	tion
Lapping		of the, and airplane antended characteristic	na	and Service Meeting	
Chamfering, testing and burnishin	g 42:	Types of	2	15 Announced 334.	436 437
Cylinder bores		Low carbon-content valuable in alloys		12 Reviewed	520

Making use of elementary principles of radio amplification for inspection	M	otorcoach and Truck Operation Motor Truc	:ks	
purposes (C S Stark) 3	28	Session at Transportation and Service Meeting Better bac	eking ability and traction	
	53 53	needed Pig fold for	65	53
Manifold, carburetion and, design as	46	Amountements 354, 457 Causes of		
MANLY, CHARLES M, ON COINCIDENTAL		Reviewed 526 Replacem	nent	36 61
Locks Manufacturer's reflections on the auto-	27 N	otorcoach Division, S A E, activities 547 Competition Coordinatio	on	63
mobile service field (John Squires	298 A	Iotorcoaches Of trans	portation services 51	19 20
MARLEY, S P, ON INFLUENCE OF TEM-		Adaptability of balloon tires to 47 Cost		
	642	type 683 Replacen	nent and maintenance	59 64
Material and design requirements of motorcoaches	181	Air from cooling-fan for heating 176 Sundries Allowance for standing load 174 Depreciation		60 60
	454 13	Attractive appearance increases traffic 685 Economic	life	59 20
MEAD, GEORGE J, ON WASP AND HORNET	20	Balancing supply and exhaust of air 175 Importance	e of tire service in motor-	69
RADIAL AIR-COOLED AERONAUTIC ENGINES 192,	609	Brakes 41, 43 Improveme	ents in shop practice	62
Mean-effective pressure, present and expected	74	Center of gravity lowered 35 Light 2-tor Crankcase-oil dilution 278 ing	n, wanted for concrete pav-	53
Pooton	, .	Design and material requirements 181 Low-cost f		42 27
Measurements		Distribution of maintenance 685 Methods of	f depreciation	62
Influence of the room in which sound,		Economy of operation 37 Obsolescen		62
	464 463	Effect of brake-drum heat on tires as tested on a dynamometer 529 Operation During t	the war	37
Sound, bibliography	466 461	Effect of interruptions of schedules 571 2-ton		64
Measuring surface finish by reflected		vice 179 Profitable	garage and hauling equip-	
light, instrument for Mechanics capability and compensation	481 299	Evils of overloading 48 ment Excess economy may defeat efficiency 179 Repairs		60
		Exhaust heating 176 Tire and it 519 the ro	ts relation to the vehicle and 5	527
Meetings, S A E		Fleet standardization and maintenance 527 Tire costs Front-end-drive 38 Trunk-line		60
Aeronautic		Fundamental reasons underlying Develop	ment in cities	238
Announcements 7, Program	$\frac{119}{120}$	Fundamental requirements of heating Using, for		237 236
Reviewed Annual, 1927 announcements 438,	191	and ventilating systems 173 Motor truck' Gassing of passengers 40 I Har	's place in transportation (F	515
Council		Good acceleration and smooth opera- Motor vehic	ele and railroad transporta-	010
September November	$\frac{342}{562}$	Greatly reduce per mile cost of opera- (W J	economics of coordination Cunningham)	526
Production Announcements 8, 120,	199	Heating and ventilating of 173 Motor Veh		
Program Reviewed	201 325	Importance of service in truck and		40
Semi-annual, 1927 announcement	335	operation 569 Careful s	ires for heavy selection important	520
Standards Committee at semi-annual meeting	9	Large moderate-speed engine prefer-	ype and size of life of	59 61
Tractor, announcements 201, 334, Transportation and service	437	Larger tire cross-section and dual Highway	and gasoline, sphere of transportation's social as-	264
Announcements 121, 201, 334, 436,	446	Tubeled elects 20 pect		540
Program Reviewed	437 515	Mail everyone and harrage 510 Horse tra	lement as applied to inspec-	264
MEISTER, LOUIS G, ON AIRPLANES FOR	194	Maintenance of equipment 536 Midship r		329 561
Merchandising motor-truck transporta-	194	Methods of Chicago Motor Coach Co 684 Railroad	transportation: economics of	526
Merchandising motor-truck transporta- tion (C S Lyon) Metalclad rigid airship development	527	Non-standardization effect of 684 Service th	hat users expect	595
(Ralph H Upson) Metals, fatigue-test results not adequate-	391	100-per cent maintenance 685 Territoria	al inspectors make current re-	467
ly interpreted Methods and means used for small-gear	543	Peaks in the operating schedule 570		521
inspection (P W Rhame) 329,	409	Problem of brakes for heavy Public's reception of service in Cleve- Mountings		
Methods for mooring and handling rigid airships (Lieut-Com C E Rosen-				555
dahl, U S N) Methods, laboratory technique and equip-	194	Relation of required and available Generator		9 561
ment Methods of finishing cylinder-bores	373	Replace rail service 575 Midship		561
(Victor Colliau)	88	Parts 38 Murphy, C	per mile, number of spring CAPT W H, U S A, ON STA-	904
Micrometer measurements, cutters set by	333		ARY AND ROTATING EQUI- AL BEACON 197,	209
Midship Shaft Mountings		Sources and methods of obtaining heat 175 Special facilities speed maintenance	N	
Redesigned	450	work 536	conversion at atmospheric	
Revised	561	per cent maintenance 527, 683 press	sure produces	78
Mileage		Suction ventilators not sufficient 174 National e	Air Transport route efficiency greatly increased	319 109
			Research Committee Engineer- Division, representative	342
Effect of, on silica-iron oxide rela- tion	667		teel and Machine Tool Exposi- 201,	
Higher temperature does not increase Motorcoach tire, contracts	57 508	Vibration 41		000
MILLER, H C, ON HONING OF CYLINDER	_	Weight 42 Navigatio Motorcoach tire-mileage contracts 508	n	
Bores Milling-machine made from drill-press	87 408	Aerial	culiarities of polar aerial	162
		When th	ne long way round is shortest	
Mixture-Ratio		Conversion at action probate	erial sistant Secretary of, E P	164
Spark-advance requirements in tests	25	Non-detonating, from heavy oil 77 War	ner named ations between service station	165
Variable Mock, F C, on Relation of Spring	24	Motorized Railroad Train and	factory (A E Hutt)	167
SUSPENSION TO RIDING-QUALITIES	288	Completeness and color harmony of Saur		541
Model of Kingsbury thrust-bearing Molding-sand	459 28	equipment 490 Nine-cylind	der radial engine reather trouble or carbon de-	580
Moller, I C, on Traffic-Regulation Plan for City of Washington		Motorized road-plow, opportunity for 651 posit	t with heavy oil	73
Molybdenum steels heat-treatment	16	Motorized two-car railroad passenger- train (A W Scarratt) Noise		
Mooring and handling rigid airships methods for	194	Motor Truck Division, S A E. activities 450	on of gear	326
Motorbus, how fares, in electric railway	445		tendencies	389

Vol.

Radio

Rada

Rail

Rai

	nenclature		Increases with concentration and cold	95	Human element as applied to inspec- tion of motor-car 32
C	lutch, revised	55 9 5 55	Water and dirt must be excluded	271 273	Iron ore in 1924 11 Line inspection 36
R	adiator ransmission	10 11	Oil-Wells		Organize service along lines of 1° Rear-axle gears 4°
on	-collegiate technical institutes	355		622	Production Advisory Committee, S A E,
on	-detonating motor fuel from heavy	77	Increased depth	634	activities 3
on	-lubricated fabric joints thern California Section, S A E,	633	Operation and Maintenance Committee,	634	Production Division, S A E
200	officers ts	440		447 290	Activities 208, 333, 5 Personnel 3
		FAI	Oscillations		Subjects assigned 5
J	am	561 560		538	Production Meeting, S A E
M	achine-screw	11 548	External friction and fatigue of steel, effects of	502	American Society for Steel Treating,
	Trench head, and wrench openings	10	How weight distribution affected	292	cooperation with 1 Announcements 8, 120, 1
17	T, ARTHUR, ON PROGRESS IN AIR- CRAFT-ENGINE DESIGN	239	Interleaf lubrication and effects of	502	Committees 201, 3
				503 501	Conveyor Session Announced 1:
	0		Our foreign trade	109	Program 2 Reviewed 3
	olescence of motor trucks	62	Outlook for large imports Overflow, importance of, in oil filter	287 283	Gear Production Session Announced 2
8	truction lights, runway markers and floodlighting	314	Overloading, evils of motorcoach	48	Program 2
a	anna .		P		Reviewed 3 Hotel accommodations 2
-	icers	440	Pace-makers, conveyors used as Packard 12-cylinder engine	348 579	Inspection Session Announced 2
	orthern California Section Phio State University student group	440	Panels, baking enamel, inspected	340	Program 2
	chosen	7	PARRISH, WILLIAM, ON INDUSTRIAL AP- PLICATION OF TRACTORS	655	Reviewed 3 Inspection Trips
	o State University student group officers chosen	7	Parts		International Harvester Co 3 Nash plant 3
1	and gas engines for oil-well pump- ing	634		20	Yellow Coach & Truck Mfg. Co 3
1-	consumption, decrease noted	273	Replacement of motorcoach Transportation of	38 416	Inspection visits announced 8, 121, 2 Machine-Tool Session
il	-Filters		Parts and Fittings Division, S A E, ac-	EE.	Announced Program
	affect on crankcase oil contamination	664	tivities Passenger-Car Body Division, S A E, ac-	555	Reviewed
I	mportance of the overflow	283 284	tivities 126, Patent office improvement is started	340 294	Program Reduced fares offered
	implification of control grooves and tire treads, analogy be-	204	Patents on aluminum bronze	339	Reviewed Stag Carnival
	tween	459 406	Pathology of internal-combustion engines	661	Announcements 8, 121,
i	hole drilling in crankshafts rectifier (W G Wall)	279	Paving, concrete, light 2-ton truck wanted for	653	Reviewed Topics at technical sessions 8, 1
i	-Rectifiers		Payment of war debts	109 570	Trips International Harvester Co
	Description of	281	Peaks in operating schedule Penfield, W S. on Engine Overhaul-		Nash Motors Co
3	Method of operation	280	PERIN, DONALD W, ON WHAT THE CON-	183	Visit to Yellow Truck & Coach Mfg
(Operating on forcing principle Operation of	281 284	TAINER CAN DO FOR FREIGHT- TRANSPORTATION	516	Production of automobile gears (C L
I	Requirements of commercial	281	Personal adjustments in college life	363	Cameron) 327, Professional education, selection in
	-rectifiers and crankcase-oil dilution	275	PHELPS, PAUL, ON TRANSPORTATION BY CONVEYOR 325,	413	Programs
i	18		Philosophy, science and economics	190	
	Advantages of forcing over suction Ash, significance of	280 674	Piecework		Aeronautic meeting, S A E Production meeting, S A E
(Cracking of lubricating, into gasoline	280	Flat-rate system versus	301	Transportation and service meeting, S A E
	Crankcase lubricating Data	10	Phases of Pinging depends upon particular engine	300	Progress in aircraft-engine design
	1925 survey 1926 survey	661	Pipe-still, miniature, method	155	(Arthur Nutt) Progress report on engine-starting tests
1	Diagnosis of some 1926 samples	671	Plug-gage method, superiority of direct- reading inspection to	367	(John O Eisinger) Propeller and engine performance
	Dynamometer tests substantiate road tests	272	Plugs, sockets and bases Plum, Johannes, on Why Does a Car	552	linked up
	Effect of addition of kerosene on oili- ness of lubricating	356	Popular conceptions of car locking	542 133	Propeller-Shaft Midship Mountings
	Effect of viscosity on accumulation of iron oxide	668	Post-scholastic engineering training	252	Redesigned
1	Explanation of formula Grouping of samples according to	356	Power		Revised
	iron oxide	662	Elevating grader needs positive	652	Public should be taught the truth about aviation
	High temperature requires suitable Influence of, on carbon deposition	82 166	Greater, permitted by increased gear- ratio	76	Public should become airwise
	Influence of temperature, fuel and, or carbon deposition	642	Relation of required and available, in	1	in Cleveland (C M Ballou)
	Kerosene unsuitable as a diluent Low carbon-values from different	271	motorcoaches Relative, of fuels	22	Pumping loss in engine
	crudes	647	Required by supercharger	260	Q
	Machine used for oiliness tests, de- scription of	357	Power-Car		Quantitative effect of engine carbon on detonation (D B Brooks)
	Mileage, effect of, on silica-iron oxide relation		Size, weight and construction Trailer-car follows, design	489	
	No cold-weather trouble or carbon de-		POWER, EUGENE, ON COST OF OPERATION	ī	R
	posit with heavy Non-detonating motor fuel from	73	AND ECONOMIC LIFE OF MOTOR		Radial Engines
	heavy Objections to use of	640	Powerplant, electric-current, and distri	-	
	Over-feeding, a cause of carbon de		PREBLE, N H, ON TRANSPORTATION BY	381	Sales volume follows good perform-
	Relation between silica and iron ox		CONVEYOR 325	, 413	ance Speed inferior
	ide Silica content of 1926 samples indi	662	suggestions to airfaring foll	k	Radiator Division, S A E, changes in
	cates little cause for wear	671	revention and causes of squeaking	483 g	semi-annual meeting report Radiator lacings to be revised
	Some effects of dilution Steam-cooling may require heavier	658 55	brakes	267	
	Study of a large number of sample yields results		operating cost	64	Radiators
	Supplying, to test bearing	358	Production		Desirable properties of liquids
	Temperatures affect Testing	671	Aircraft engine	226	Lacings to be revised Methods for testing corrosive action
	Very little if any increase in carbo deposit		Automobile gears 327	7, 475	Nomenclature
	Viscosity		Conveyors used as pacemakers	348	Survey of available materials for use
	Conradson carbon-residues of lubrica ing, and	249	Coordinating gear design and, method Gear-steels and automobile gears	s 111 422	Tie-rod design
	Effect on friction	457		251	

33

13

Radio amplification for inspection pur- poses, making use of elementary principles of 3		toad-delays, reduction of involuntary toad-location engineering toad-plow, opportunity for motorized	570 234 651	SAUNDERS, L P, ON HIGH AVERAGE OPERATING-TEMPERATURE AND EN- GINE AND CAR OPERATION	81
Radio Direction-Finding		Roads		SAURER, C, ON NEW AUTOMOTIVE USES FOR RUBBER	541
	42 97	Cannot duplicate road conditions in		Saving cost of boxing Savings and life insurance	237 372
Rail Cars		laboratory Detroit traffic	384 568	SCARRATT, A W, ON MOTORIZED TWO-CAR RAILROAD PASSENGER-TRAIN	489
Automotive-type brakes built on axles 5	00	Dynamometer tests substantiate road tests	272	Scavenging pressure and variable injection-time	74
Details of specially-designed 175-hp	92	Effects of smooth, and closed bodies Federal-aid	580 161	Schedules	
	89	Fields and requirements for automo- tive equipment in building	650	Interruptions, effect	571
tion	89	Location engineering Motor-truck tire and its relation to the	234	Peaks in Schoff, A L, on Cushion Tires	570 528
	98	vehicle and Opportunity for motorized plow	527 651	Science, philosophy and economics Scientific research (C F Kettering)	190 537
qualities	199	Theory and method of New Haven's operation 518,		Scientific transportation (W P Kellett) 516,	
Crandall) 518, 6	601 601	Three-lane two-way Toll	$\begin{array}{c} 252 \\ 238 \end{array}$	Scientist's point of view of headlighting SCOTT, J B, ON INSPECTION OF KNIGHT	108
	,01	Tractor needed for wheeled scrapers Transportation's social aspect	651 540		351
Railroads Coordination		Roads for Detroit traffic Rockwell hardness-test for steel ap-	568	Scrapers	
Of transportation service	$\frac{519}{520}$	proved 125, Roesch, Daniel, on Audibility Anti-	555	Practical difficulties of motorizing Wheeled, tractor needed for	651 651
Expansion of terminal facilities	567	KNOCK TESTS AND KNOCK-IN- TENSITY EVALUATION	17	Screen material for air-cleaners and	
Motorcoaches	576	ROHRBACH, ADOLF, ON ECONOMICAL AND RAPID PRODUCTION OF ALL-METAL		manner of placement	542
	575	AIRPLANES AND SEAPLANES Roller bearings, inch	193	Screw Threads Division, S A E	
nomics of coordination	526 526	RONDOT, E F, ON LOW-COST FLEET-OPER- ATION	542	Activities 560, Changes in semi-annual meeting report	561
Should, control highway transporta-	518	Roots supercharger for Liberty-12 en- gine	257	Screws, bolts and nuts Seaplanes, economical and rapid produc-	11
	604	Roots-type aircraft-engine supercharger (Arthur W Gardiner)	253	tion of all-metal Seats, improved automobile	193 52
Haven's highway operation 518,	575 171	Roots-type compressor, how, functions ROSENDAHL, LIEUT-COM C E, U S N, ON	255	Sectional Committees	-
Reconditioning old cars pays, how	169	METHODS FOR MOORING AND HAN- DLING RIGID AIRSHIPS	194		447
Reflected light, instrument for measur-	570 481	Rotating and stationary equisignal bea- con (Capt W H Murphy, U S A,		Ball Bearings, activities Drawings and Drafting Room Prac-	447
Reflection, surface polish measured by	482	and Lieut L M Wolfe, U S A) 197 Rotating connecting-rod boring-machine	, 209	Representatives	342 126
Refocusing and reaiming, bulb chang-	101	Rotor-speed, effect of	259	S A E to be represented on new Shafting, activities Small Tools and Machine-Tool Ele-	340
Registration list at transportation and	530	Rubber		ments	. 562
service meeting, S A E Relation of spring-suspension to riding qualities (F C Mock)	288	As an automotive material Causes of difference in degree of	541	Representatives S A E joint sponsor	342 126
Repairs, motor truck	60	cracking Degree of cracking decreases as ten-	363	Wire and Sheet-Metal Gages, sponsor ship accepted	
Replacement		sion is increased Material for mechanical engineering	361 540	Sections, S A E, officers of Northern	n
Causes of, in motor trucks Cost of maintenance of motor trucks	61	Neutral glycerine does not attack New automotive uses for	96 541	Seek cracking process for production o	f 440
and Maintenance and, cost of motor trucks	64	Rubber as an automotive materia (Charles Froesch)	1	non-detonating fuel (J B Hill and T G Delbridge)	75
Operating cost and annual, of automo- biles	63	Rubber as a material for mechanical en- gineering (W A Gibbons)	540	SEELY, G T, ON STANDARDIZATION OF MOTORCOACH EQUIPMENT AND 100	-
Reports		Rules for judging locks Runway markers, obstruction lights and	134	Selection in professional education	, 683 202
Dr Liebowitz's to special research		floodlighting Russell, A P. on Theory and Methol	314	Selection of an air-cleaner (A H Hoff man)	542
committee on mechanical springs Engine-starting tests progress	544	OF THE NEW HAVEN'S HIGHWAY	, 575	Semi-Annual Meeting, S A E	
Research		Rust and tight shackles effects or	503	1927 announced	335
Cooperative, instituted on contamina-		RUTHERFORD, R R, ON LOW-COST FLEET OPERATION		Standards Committee meeting at 132	6 9 227
tion of crankcase oil Establishment of understanding among	658		014	Service	
design and operation branches of aircraft	196	SAE		Capability and compensation of me	
Factors left uncontrolled in crank- case-oil contamination	658	Amendments to by-laws	562	chanics	399 302
Head-lamp illumination Lighting data developed	$\begin{array}{c} 122 \\ 203 \end{array}$	Council meeting September	342	Education in maintenance manage	
Riding qualities Scientific	544	November	562	Flat-rate charges but hour-rate pay Importance of tire, in motorcoach an	521
Springs Springs from automotive viewpoint	544 543	S A E Handbook		truck operation Manufacturer's reflections on the auto	569
Suggested work Results obtained in lapping cylinder-	546	Critique of Mailed Sept. 15	338	mobile field Organize along production lines	298 171
bores (Dan Smith) RHAME, P W, ON METHODS AND MEANS	90	Well received	13	Ownership of special tools Phases of piecework	300
USED FOR SMALL-GEAR INSPEC- TION 329,		Safety		Piecework versus flat-rate systems Quick accurate work requires superio	
Piding Qualities		Brake code Comfort and, demand action in head	54:	Special field-supervisors	596 298
Riding Qualities Conclusion deduced from tests	293	lighting Cost, and comfort three problems	10	Treatment of "come-backs"	300
Relation of spring-suspension to Research	288	civil aviation Fundamental reasons underlying mod	19		P 300
Trucks designed for easy	499	ern coach design Insurance rate an index of	3 48	3 Warner)	441
Rims		New brake code Safety code for brakes, new (M	54		
Pneumatic-Tire High pressure	11	Eldridge)	54	1 Cleanliness essential to first-cla	88
Low-pressure Sections	11	of civil aviation (W P Ma	C- 19	Factory must exercise direct control	161
Trend in Ring-gears, starter, and flywheels	478	Sales, farm equipment	32	ply Mechanics should know correct adjus	16
RITCHIE, H C, ON LIGHTING EQUIPMENT FOR AIRWAYS, AIRPORTS AND AIR-		of aeronautic engine Salt solutions are corrosive	61	8 ments 6 Needed relations between factory as	16
PLANES 197 Rivets, why brass, are preferred	, 309 267	Sand, molding	- 2	8 Sweepers are trained as mechanic 0 how	cs, 17:
					-

Su

ervice Stations (Concluded) Tools and fixtures for maintenance			461 461		55
work 520, 520, 520, 520, 520, 520, 520, 520,	100		463	Ground-return wiring system, nevised	54
Why instruction in methods is needed	168	oil (R L Skinner) Spark-advance requirements in mixture-	275	Radiator lacings, revised	56
afting Sectional Committee, activities	340	ratio tests Spark-plugs, what makes, spark	25 442		55
ARP, DR C H, ON WORK OF STEERING	179	Special Research Committee on Mech		Woodruff keys, proposed Year Book of American Engineering Standards Committee issued	3:
immy		Activities	543	Standards Committee, S A E	
	538 443		544	Activities Discussion at semi-annual meeting	5
immy and tramp (F F Chandler)	443 443	Specifications		Meeting at semi-annual meeting	
p and airplane drift differ ock-absorber requirements of springs ock-absorbers and long flexible	163	Steel 1046, revised Steels 2015 and 2115, proposed Tail-lamp revised	553 554 552	Standing load, allowance for, on motor-	3
op practice, improvements in		Speed		Stands	
	385 653	Control of	66		621 621
ovels, motor, how can, be improved	652 654	Curves of limiting engine Determination of working, of aircraft engines during the war	589 619	STANLEY, F C, ON CAUSES AND PREVEN-	2
mal-lamps, new standard for mal service to air-transport com-	552 211	Direction and, of storms Four engine, afforded in both direc- tions	232	TION OF SQUEAKING BRAKES STARK, C S, ON INSTRUMENT FOR MEASUR- ING SURFACE FINISH BY REFLECTED LIGHT	
gnals		Gasoline-electric drive running at most economical	68	STARK, C S, ON MAKING USE OF ELEMEN- TARY PRINCIPLES OF RADIO AMPLI-	
	218	Have only begun developing, possibili- ties in aircraft engine	619	FICATION FOR INSPECTION PURPOSES Starting friction of springs	
Best angle of fixed and rotating inter- locking	217	Influence of cranking, on engine Inspection versus care	369	Starting system, three independent, provided.	4
	214	Radial engine, inferior Survival of engine by high	618 619	Static phase-change method of deter- mining dew-point	
Directional, transmitted from ground stations	210 216	SPICER, C W, ON ACTION, APPLICATION AND CONSTRUCTION OF UNIVERSAL-	00=	Stationary and rotating equisignal beacon (Capt W H Murphy, U S A, and	
Equisignal transmission Intensity of, at distance of 7 miles Maximum and minimum methods for aircraft	216 212	JOINTS Spicer universal-joint, development of Spiral pump-gears and camshaft Spline shafts	625 632 480 479	Lieut L M Wolfe, U S A) 197, Steam-Cooling	
Method used by Zeppelins Robinson method	$210 \\ 212 \\ 211$	Spring-Suspensions		May require heavier oil Types of radiators	
Service to air-transport companies ilica	WAL	Dynamical problems of Relation of, to riding qualities	545 288	Steam injected into fuel mixture Steam pockets must be avoided	
Content of 1926 samples indicates little cause for wear	671	Springs		Steels	
Iron oxide and, relation between Iron oxide and, relation, effect of	662	Automotive viewpoint	543	Cooperative tests begun	
mileage of oil LSBEE, DR F B, ON WHAT MAKES A	667	Conclusions deduced from tests Elastic problems of	293 545	External friction and fatigue effects on oscillations	1
SPARK-PLUG SPARK Implified practice recommendations	442 110	Experimental observations of action Long flexible, and shock-absorbers, ef-	291	Final heat-treatment for gear Forging and preliminary heat-treat-	
ingle sleeve-valve engine (W A Frederick)	538	fect of Research	$\frac{292}{544}$	ment for gear Gear, and the production of automo-	
ix-Cylinder Engines		Shock-absorber requirements Standardization	289 544	bile gears Grain size of	
Balance	584	Suggested research work Springs from automotive viewpoint	546 543	Heat-treatment for molybdenum Manganese limits changed	
Difficulties Reasons for popularity	579 581	Sprockets, conveyor chain	344	Rockwell hardness-tests approved 125, S A E specifications to be revised	
Truck Types of crankshaft	441 588	Squeaking Brakes		S A E 1046 specification revised S A E 2015 and 2115	
ix-cylinder truck-engine (E Favary)	441	Causes and prevention of Concentric brakes sometimes	267 268	Selection of gear Testing	
ize		Stopped by removing lining sector	269	World Bearing	
Correct type and, of vehicle Governed by torque in electrical ma-	53	SQUIRES, JOHN, ON MANUFACTURER'S RE- FLECTIONS ON THE AUTOMOBILE SERVICE FIELD		Steering committee, work of Steering-gear of motorcoach	
chines Power-car	66 489	Stabilization of Europe	109	IIAGU	1
KINNER, R L, ON SOURCES OF CON- TAMINATION OF CRANKCASE OIL	275	Stag Carnival at Production Meeting	ng	Steering, trend in Steering-wheel, combination fixed lock Steering-worm wheels	
LIGH, T S, JR, ON VOLATILITY TESTS FOR AUTOMOBILE FUELS 151,	324	Reviewed	, 200 328	Steering-worms Stewart, R W, on Testing of Gasoline AND OF Oil, of Engines and of	E
mall Tools and Machine-Tool Elem	ents			STEEL STODDARD, E R, ON WHAT GOES WRONG	G
Sectional Committee	500	Advantages of, on one type of equip- ment	683		
Representatives	562 342 126	Aeronautic, outlined Ball-bearing	13	Stop-watch method used mainly in bench operations	
S A E joint sponsor MITH, DAN, ON RESULTS OBTAINED IN		Cost reducer Effect of non, motorcoach	684	Storms, speed and direction of	
LAPPING CYLINDER-BORES MITH, G L, ON TORQUE-EQUALIZED	90	Motorcoach equipment	339 527	CI.	
BRAKES MITH, WESLEY L, ON HOW I FLY AT	542 228	Motorcoach fleet Simplified practice recommended	110		
Night 196, ockets, plugs and bases olid-tire felloe and felloe-bands	552	Springs Tire cross-sections, need for Without ruts	111	tion of	-
ome freight-handling problems of New York City (Elihu Church)	235	Without ruts Standardization as a cost reducer Standardization of motorcoach equipmen and 100-per cent maintenance (G.			e
Sound		Seely) 527	, 683	Suggested remedy for crankcase-oil dilu-	-
Frequency determination and filtering How the studies can be applied Influence of the room in which meas-	438	Standards	204	E Wilkin) Suitability of automotive worm-gearing (G H Acker)	
Its measurement	464	Approved by letter-ballot	340	Sulphur	
Judgment by, erratic Measurement, bibliography	329	Army-Navy aeronautic	1		

Superchargers		Corona, of ignition cables 361 Cushion 528 Description of apparatus for corona 362 Effect of brake-drum heat on motor-	8
Airplane-engine Compression	388	Different temperatures for gasoline 80 coach, as tested on a dynamometer 52: Excessive brake-drum temperature 57:	
Efficiency and delivery rate Rotor-speed and, effect of	256 259	lighting 205 High-pressure pneumatic rims 1 Dynamometer, substantiate road 272 Impact tests 52	
Compressors and diffusers Conclusions deduced from tests	387-	Effect of brake-drum heat on motor- coach tires Importance of service in motorcoach and truck operation 529	19
Development history Displacement versus centrifugal	390	Endurance, of Wright Whirlwind engines 308 Influence of pneumatic, on the development of automobiles 56	39
Effect of, in flight tests	262 255		11
How Roots-type compressor functions Laboratory tests show high efficiency	258	Starting, additional 3 Motor truck, and its relation to the Engines 444 vehicle and the road 52	
Methods of control and power required Mounting of, with the engine	262 257	Equipment to be used for head-lamp 122 Motor truck 6	60 11
Roots, for Liberty-12 engine Roots-type aircraft-engine	253	ly interpreted 543 Oscillation effects with low-pressure 53	38 70
Supercharging		Gasoline 444 Rim sections for pneumatic 1	11 29
Car materials and fuel	624	Hydraulic system for applying pressure Value of attention to details 57	74 72
Internal-combustion engines Maintains power at altitude	385 254	Impact Viscobuse's machine for journal book 527 TODD, R R, ON HUMAN ELEMENT AS AP-	-
Theoretical action due to Supercharging in air-cooled engines	222	ing lubrication 455	29
Supercharging internal-combustion en- gines (C R Short)	385	officional of the roads	00
Surface		bearing lubrication Machine used for oiliness, description 455 Tools and Fixtures	
Elements used and their hook-up for		of 357 Mathematical studies of lubrication 454 Service-station maintenance work 5	95
measuring Finish measured by reflected light, in-	482	Measuring-apparatus and its operation 382 Special, expedite work Method of making a run for bearing 359 Tools and fixtures for service-station	97
strument for Polish measured by light reflection	481 482	Method of survey of head-lamps described 30 maintenance work (A H Leipert) 520, 5	95
Sweepers are trained as mechanics	172		172
Switzerland	412	Objects of previous and present engine starting Torque	
T	F 40	Oils 444 Control of	66 542
T-slots, bolts, nuts and cutters Tail-lamps, revised specifications	548 552	Duamaning implifies soldier for some 200	585
Tapped holes, depth of, in aluminum Taub, Alex, on High Average Operation		Progress report on engine-starting 79 trical machines	66
TEMPERATURE AND ENGINE AND CAL	81	Result of maximum explosion-pressure 379 Torque-equalized brakes (G L Smith) by Tower, Beauchamp, lubrication work of 4	542 454
Teaching engineering Technical institutes, non-collegiate	287 355	Second bearing 360 Traction, better, needed in motor-trucks to Shimmy on the 12-hp 1933 Repault Tractor-lubrication problem may be	653
Technical sessions at aeronautic meeting S A E	119	automobile 538 Solved by prevention of crankcase-	270
	, 461	ture-ratio 25 Spring action 291 Tractor Meeting	
Techniques of engineering education Temperature and compression retention	247	Steels 444 Supercharger in flight, effect of 262 Announced 121, 201, 334, 4	437
Temperatures		Supplying oil to bearing 358 Committee personnel	335
Accuracy of metal, assured	82	Wright Whirlwind results summarized 308 Tractors	
Control of cylinder, by evaporation Cooling-water, relationship of	265 383	Theft	655
Danger in correction for Does not affect fuel consumption in air	383		651
cooled engines Effect on oils	$\frac{620}{671}$	Theory and method of the New Haven Traffic	
Excessive brake-drum Factors that affect operating, of the		Railroad's highway operation (A P Russell) 518, 575 Attractive appearance of motorcoach Thermosiphon systems, effect of viscosity 641 increases	005
mo-vapor cooling-system High average operating, and engir	296 ie	Boston's problem	685 525
and car operation High, requires suitable oil	81 82	ton	541 568
Higher, does not increase mileage How high, affects cooling systems	57 56	densing 296 Study of street	615
deposition 16	6, 642	ture 296 Traffic-regulation plan for City of Wash-	150
Uniform operating, desirable TENNY, PERRY L, ON COORDINATING GE.	78	Steam injected into fuel mixture 296 Trailer-car follows power-car design	541 492
DESIGN AND PRODUCTION METHOD	3 111		444
Tension, degree of cracking of rubb decreases with increased	361	THIEFELS, F N, ON LAPPING OF CYLINDER-BORES 84 Transmission Division, S A E	
Terminals		Three-lane two-way roadways Thrust-bearing, model of Kingsbury 459 Activities 555,	559
Facilities, expansion of Horse-drawn vehicles at	567 235	Tie-rod design Time for trading-in automobiles 10 Changes in semi-annual meeting report 63 Transmission-gears 426,	
Long-distance versus, trucking	236	Time saved by the rebuilt-unit system Time-saving valve-cap remover 171 600 Transmissions	
Territorial inspectors make current r pairs	e- 521	Time-studies are valuable 368 Timian, Hal H, on Carburstion and Another form of look	137
Testing of gasoline and of oil, of engin and of steel (R W Stewart as	ıd	ENGINE PERFORMANCE 546 Four-speed coming	536
T A Fitch) Testing laboratories, list of commercia	1 = 185	Nomenclature	136 11 597
Tests		Tire and Kim Division, S A E	001
Acceleration and idling, how made	376	Activities 208 Changes in semi-annual meeting report 11 Advantages and disadvantages	
Air-cooled airplane engine Altitude, compression or part thrott	222 le,	Time Consider at Themporentation and method	563
effects of Anti-freeze preparations	23 98	Service Meeting Assembly conveyors combined with	337
Apparatus employed in anti-knock Application of equipment for hea	d- 17	Announcements 334, 436 Container system	519
lamps Audibility anti-knock, and knock-		Program 437 Container system operation 527 Conveyor 325,	560
tensity evaluation Audibility method for anti-knock fu		Tire treads and oil-grooves, analogy between 459 Coordination of services	51
Bearing, results of Black baking-enamel progress	359 126	Economic range of container operation	
Brake code and dynamic brake-teste Conclusions deduced from spring a	nd	Facilities for trunk-line operation of	3
riding-qualities Conclusions deduced from supercharg	293 er 263	Advantages derived from use of bal- loon To be be a second from use of bal- loon To be be a second from use of bal- loon To be a second from us	23
Cooperative steel, begun	207	Causes of changes 572 Horse-drawn vehicles at terminals	23

Macrobandamen more received with the control process of the control of the contro	Another which and alliford coordinate and alliford control alliford and all all and a problems of the	THE JOURNAL OF THE SOCIETY	
Anthorse-vention and full and coordinate coordinates and full and the control of	Anter-excision and military developments of the control of the con	Transportation (Concluded)	· N
Anthorse-vention and full and coordinate coordinates and full and the control of	Anter-excision and military developments of the control of the con	Merchandising motor-truck	
Character by the problems of t	Official case to be a modern of the problems of the company of the	Motor-vehicle place in 527 Valva	
Chape profile no overcomes 35	Other proches overcomes Other proches O	New tools,	
Farty Sevential Control of Indaho-manifold Scientific Property of the Control of Indaho-manifold Scientific Property of the Control of Indaho-manifold Scientific Property of the Control of Property of Scientific Property of Scien	Farther Sections of the control of inhabe-manifold of the control	Obstacles to be overcome 518 Values 612 Cheap light motel	
Scientific country of the property of the prop	Schemiter of the property of t	Parts mobile metal would re	educe auto-
Social assected Control hishway 16, 545 Tedence, and the control hishway 16, 545 Tedence of the control o	Social assection control highway 16, 543 Tondourse and the continue of the control of the contr	China Control of the	
Some freight-handliffer webdomen of New Trees and a server of the control of the	Some freight-handliff and street of the control of	footed and of the state of the	nobile
Amouncements 21, 20, 436, 45 Reviewed 121, 20, 436, 45 Amounced 121, 20, 436, 45 Amounced 121, 20, 436, 46 Amounced 131, 20, 436, 46 Amouncements 34, 43 Amouncements 35, 43 Amouncements 35, 43 Amouncements 35, 43 Amouncements 36 Amouncements 37 Amouncements 37 Amouncements 38 Amouncements 39 Amouncements 31, 46 Amouncements 31, 46 Amouncements 31, 47 Amouncements 31, 48 Amouncements 32, 43 Amouncements 34 Amouncements 35, 43 Amouncements 35, 43 Amouncements 36 Amouncements 37 Amouncements 37 Amouncements 38 Amouncements 39 Amouncements 31, 48 Amouncements 32, 44 Amoun	Announced 11, 20, 436, 45	Some freight-handlighway 518 Vapor-process 682 Powar 582 Powar 582	
Separation of New Historing 25 states of the property of the p	Lightway method of New Yisteding 255 and the Company of the Compan	Terminal verges of New Variable mixture-rest	. 4
What more tropics for long Baules of the control of	What mee of tripode for long Baulty What fine controls industry should Work flat automotic modulity should Very flat automotic modulity should Announcement of the flat automotic modulity should be	method wall CD wall CD	ro-control
Transportation and Service Meeting Fundamental action at sufficient on the superior of the su	Anomorous file of the control of the	What the motor trucks for low 518 Ventiles:	
Transportation and Service Meeting Amounced Amounced Amounced 121, 201, 464, 446 Vertical four suction, suc	Transportation and Service Meeting Announced Announce	and allfomotion and for freight and allfomotion and the freight and the freigh	e-tool-
Announced 121, 201, 456, 448 Announced 122, 456, 458 Announ	Amounced 121, 201, 416, 448 Alternative personnel 122, 201, 416, 448 Reviewed and Service Meeting varieties of the state	motorcooply and exhaust of air to What is meant by traffic	
Announced 121, 50, 404 (Vibrations 121, 50),	Announced 121, 50; 454 (1975) When pools canches and the properties of the propertie	AUDIOTOGO - VIGIO MAN DISTOGO - PIUS Sharks	stion? 15
Banques 121, 201, 456, 448 Vibrations Coscach-Truck-Itality and Session Coscach-Truck-Itality and Session Daries	Banques 121, 201, 450, 445 Vibration Vibrations 170 Announcements 24, 450 Coech-Truck-Railrided Session 24, 457 Coech-Truck-Railrided Session 25, 457 Coech-Truck-Railrid	transport Can do for	CDI B B
Announcements Conch-Truck-Raifrand Session Conch-Truck-Raifrand Session Properties of the Conch-Truck Raifrand Session Conch-Truck-Raifrand Session Properties of the Conch-Truck Raifrand Raifrand Session Properties of the Conch-Truck Raifrand	Announcements Conchrupted-Ratifund Seasion Conchrupted Seasion Conchr	Banquet Vertical for Sumcient on Wheat pool, Canadian Sumcient on	Perin) 51
Couch-fruck-Railroad Session From the components of the control o	Conchrence of the control of the con	Announcements 174 Wheels	36:
Cheviewed State of the Control of th	Reviewed 534, 430 Light brake-linkage amplifies 544 Motorcode 545 Motorcode 645 Motorc		
Committee personnel Announcements Announceme	Committee personnel Amount of the personnel Frogram Frogram Signature Announcements Announcements Signature Announcements Signature S	Announcements Session 525 Engine Cross-section an	d dual
Announcements Session 334 Visionity 24 Secretary of the B B T unit Announcements Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 434 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or property of the B B T unit Announce Session 435 Affice Contradent or	Announcements Seasion 334 Visionity 46 Contraden on partners of the season 47 Contradent of the property of the program of the season 48 Contradent of the property of the program of the property of the prop		
Registration list Registration	Reversements 134, 436 Conradom carbon-residues of lubricat. Reviewed committees 134, 436 Conradom carbon-residues of lubricat. Reviewed committees 134, 436 Conradom carbon-residues of lubricat. Reviewed 143, 436 Conradom carbon-residues of lubricat. Reviewed 143, 436 Conradom carbon-residues of lubricat. Reviewed 143, 436 Conradom carbon-residues of lubricat. Announce Seasion 143, 437 Contradom carbon-residues of lubricating-cities of a carbon-lubrate carbon-lu	and on miner and one of the control	539
Reviewed Announcement Announcem	Reviewed Annual Service of the Contradous Carbon residues of lubricat. Annual Service of the Contradous Carbon residues of lubricat. Annual Service of the Contradous Carbon Freedom of the Contradous Carbon Annual Service Carbon Annual Service of the Contradous Carbon Annual Service	Thomas world	
Jocal committees 334, 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 434 Maintenance Seasion 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 434 Maintenance Seasion 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 431 Maintenance Seasion 432 Maintenance Seasion 434 Maintenance Seasion 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 440 Mirchear Copy the Cicare Coales of Seasion Seasion 440 Mirchear Seasion Seasion 440 Mirc	Josef committees 334, 435 Maintenance Seasion 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 431 Maintenance Seasion 437 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 432 Maintenance Seasion 434 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seas	Reviewed Conredom	470
Jocal committees 334, 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 431 Maintenance Seasion 431 Maintenance Seasion 432 Maintenance Seasion 434 Microsity and Dreamandson carbon 437 Microsity and Dreamandson carbon 438 Microsity and Dreamandson carbon 439 Microsity and Dreamandson carbon 430 Microsity and Dreamandson carbon 430 Microsity and Dreamandson carbon 431 Microsity and Dreamandson carbon 432 Microsity and Dreamandson carbon 434 Microsity and Dreamandson carbon 437 Microsity and Dreamandson carbon 438 Microsity and Dreamandson carbon 439 Microsity and Dreamandson carbon 430 Microsity Breamandson 430 Microsity Br	Josef committees 334, 435 Maintenance Seasion 435 Maintenance Seasion 436 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 431 Maintenance Seasion 437 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 430 Maintenance Seasion 431 Maintenance Seasion 432 Maintenance Seasion 434 Maintenance Seasion 437 Maintenance Seasion 438 Maintenance Seasion 438 Maintenance Seasion 439 Maintenance Seasion 430 Maintenance Seas	Announcements 515 Effect on account and type J-5 already	55 498
Announce season Thermosiphon system Thermosiphon	Announce Season Thermosiphon section Thermosiphon section of the		1e, de-
Reviewed Function by conveyor (Paul Phelis of Transportating by Converging and N. P. Proble) (Parting and N. Proble)	Reviewed 334, 436 Motorcack and Truck Operation Session 329 Motorcack and Truck Operation 324, 436 Motorcack and Truck Operation Session 329 Motorcack and Truck Operation 324, 437 Depends on an erratic mental operation 102 Motorcack and lighting 102 Motorcack and lighting 102 Motorcack Operation 102 Motorcack and Interest Operation 103 Motorcack and Interest Operation 104 Motorcack and Interest Operation 104 Motorcack and Interest Operation 104 Motorcack All Properties of and lighting 105 Motorcack and Interest Operation 104 Motorcack All Properties of and lighting 105 Motorcack All Properties of and lighting 105 Motorcack and Interest Operation 104 Motorcack All Properties of and lighting 105 Motorcack All Properties Operation 104 Motorcack All Pr	Announcement 533 View Thermosiphon systems and cold 95 REMEDY ROSERT E. ON	um) 542
Jubbilly, Burke's stating-oils (George options-mains) and construction of the background of the backgr	Substitute Burkers Stating-oils (George options) Associated and Truck Operation Session From From Stating-oils (George options) Associated and Stating-oils) Associated and Stating-oils (George options) Associated and Stating-oils (George options) Associated and Stating-oils (George options) Associated and Stating-oils) Associated and Stating-oils (George options) Associated and Stating-oils (George options) Associated and Stating-oils) Associated and Stating-oils (George options) Associated and Stating-oils) Associated and Stating-oils (George options) Associated and Stating-oils (George options) Associated and Stating-oils) Associated anating-oils (George options) Associated and Stating-oils (George o	Program 334 42c residue the Conrade 641 Will American Change Case-Oil	Diver
Frogram Frogra	Frogram of the program of the progra	Motorcoach and Truck O 437 Visibility Burke) Wilson, Commanning for carbon Wilson, Commanning for carbon Wilson, Commanning for carbon with the carbon carbon with the carbon carbon with the carbon carbon with the carbon	
Reviewed Resistration list Re	Announcements 5.32 Free strate of the program 3.34, 436 Free strate of the program 4.347 Free strate of the program 3.34, 436 Free strate of the program 4.348 Free	Air-Cooled	V. ON 623
Fundamental program The Sensor and District Marker of State of Sta	The Sessor and Fundamental principles of, and lishing 102 principles of, and lishing 103 principles of, and lishing 104 principles of, and lishing 105 principles of all of the principles of all of the principles of all observations of all observa	Reviewed 934, 436 Tr.	AVAL
Fundamental program The Sensor and District Marker of State of Sta	The Sessor and Fundamental principles of, and lishing 102 principles of, and lishing 103 principles of, and lishing 104 principles of, and lishing 105 principles of all of the principles of all of the principles of all observations of all observa	Registration list 526 Down Robert E. on F.	RANS-
Anneason and lighting 102 Wire and Assert Metal Gases Section 1520 Programments 234, 435 Direct dew-point observations 234, 436 Direct dew-point observations 234, 446, 446, 446, 447, 447, 447, 447, 44	Annession	Tentative program 530 Fundamental WINCHESTER I WINCHESTER I DILLY WINCH WINCHESTER I DILLY WINCH WINCH WINCH	MEDY
Reversarian Reversarian Satisfaction of the Composition of the Satisfaction by conveyor (Paul Phelips 1977) Against and N H Prebley of Paul Phelips 297 (Satisfaction plan for Detroit 325, 447 (Satisfaction	Reviews and Reviews and Franchis of the Brain of Detroit of Starting and N H Previews of Previews and Starting and Startin	Appearson 324 Volcative and lighting 102 Wire and or	AIN-
Transportation by conveyor (Paul Phelips Transportation by conveyor (Paul Phelips Transportation plan for Detroit plan for De	Gasoline special distribution by conveyor (Paul Phelips Franch and H Preible) stranged and H Preible stranged and	Wiring code Sponsorests Section Section 19 S	onal 520
Transportation Frebley Fredity Predity Predity Predity Predity Cause of a standard property of the standard proposed of t	Franchis Treble) Franch	Transportation by 437 Gasoline Wiring color-code recode Wiring color-code recode Wiring color-code recode with a color-code recode reco	ted 342
Taveling instructor from factory would selected and provided and engine design from the foliage of the foliage and engine design from the foliage and engine foliage and	Traveling instructor from factory would reason in the state of the sta		452 554
Treads, analogy between oil-grooves and Treads of automobile and engine design Arrends of automobile and engine design Arrends of automobile oil place Trucker of the Hard of automobile oil place Trucker oil place oil place Trucker oil place Trucker oil place Trucker oil place	pay pay pay of from factory would reads, analogy between oil-grooves and reads of automobile and engine design of the properties of automobile and engine design reads of automobile and engine engine engine engine engine engine engine engine engine en		452, 547 ARY
the street of th	treadogy between oil-grooves and treating between oil-grooves and treating between oil-grooves and treating between oil-grooves and treating the design of the growth of t	nav deter from fact 609 ong, Jr)	CON 197 200
Trucking, terminal versus long-distance of Trucking, terminal versus	Troile, H. Horning and engine design of the B. B. T. unit troiled in the proper of the process of the proper of th	tire 151, 324 Work was key standard work with the standard work was standard work work with the standard work work was standard work work with the standard work work with the standard	ON-
Trucking, terminal versus long-distance Trucki	Trucking, terminal versus long-distance Trucking, terminal versus long-distance Trucking, terminal versus long-distance Trucking, terminal versus long-distance Trucking terminal versus long-distance Trucking Body Body Body Body Body Body Body Bod	Trends of automobile and engine 4 459 Wabbler mechani	16
Trucking, terminal versus long-distance of the proper state of the	Truckes germinal versus long-distance of the proper state of the p		H 106
Trucks Body Designed for easy-riding qualities Truck-Line Operation Development in cities Excellities for motor truck Pacifilities for motor truck 237 Warner, E P Charles payment of Warner, E P Compliane tary dinner Named Assistant Secretary of the Secretary of the Pacifilities for motor truck 238 Warner, E P, ON COOPERATION IN AIR- CHARLET OPERATION BRANCH DESIGN WARNER, E P, ON ESTABLISH MENT OF UN- SIGN AND OFFICE AND COMMER. CHARLET OPERATION BRANCH DESIGN WARNER, E P, ON SERVICE AND COMMER. Warner, E P, ON ESTABLISH MENT OF UN- SIGN AND OFFICE AND COMMER. WARNER, E P, ON ESTABLISH MENT OF UN- STEPPED OFFICE AND AND CAMONER RESEARCH. DE- SUIT ADDRESS AND COMMER. Warner, E P Warner, E P Warner, E P Chord of and length of life of 468 Fruitze (and length of life of 469 Fruitze (and	Trucks Body Designed for easy-riding qualities Frunk-Line Operation Development in cities Facilities for motor truck 237 Warner, E P Complianentary dinner Named Assistant Secretary of the Facilities for motor truck 238 Warner, E P Complianentary dinner Named Assistant Secretary of the Facilities for motor truck 237 Warner, E P Complianentary dinner Named Assistant Secretary of the Facilities for motor truck 238 Warner, E P Control includer Structure Control includer Structure Worm-Gears Automotive Warner, E P Worm-Wheels Control includer Worm-Gears Automotive Warner, E P Warner, E P Warner, E P Named Assistant Secretary of the Warner, E P Named Assistant Secretary of the Warner, E P Control includer Structure Worm-Gears Automotive CH Calkins) Worm-Wheels Choice of materials for Worm-Wheels Control includer Worm-Gears Automotive CH Calkins) Worm-Gears A	Trucking, terminal drive all wheels 445 WALL, W.G. ON On 317	615
Body Designed for easy-riding qualities Paclification of Control of Cost and length of life Assistant Secretary of the Paclification of Cost and length of life Assistant Secretary of the Paclification of Cost and length of life Assistant Secretary of the Paclification of Cost and length of life Assistant Secretary of the Named Assistant Secretary of the Secretary of the Secretary of the Named Assistant Secretary of the Secretary of th	Body Designed for easy-riding qualities Possing of the Development in cities Facilities for motor truck Particles of motor truck Particles of motor truck Particles of motor truck Particles of Markers, E.P. on Serablishment of Markers, E.P. on Serablishment of Markers of Mark	Trucks Walsh, David I, address 59 Worm-Gearing 279	472
Trunk-Line Operation Development in cities Facilities for motor truck Trunk-casting inspection ARIPH Agriculture 350 Complimentary dinner Named Assistant Secretary of the Named Assistant Secretary of the Procedure for Lubration of Assistant Secretary of the Named Assistant Secretary of the Procedure for Lubration of Assistant Secretary of the Named Assistant Secretary of the Procedure for Lubration in Allactor Warner, E. P. ON COOPERATION IN Allactor Strength of Strength of Suitability of automotive Add Strength of Suitability of Called Add Strength of Suitability of Called Add Strength of Suitability of Called Add Strength of Suitability of Calle	Trunk-Line Operation Development in cities Facilities for motor truck Trunk-Line Operation Development in cities Facilities for motor truck Trunk-Line Operation Navy Warner, E. P. on Cooperation in Air- Sign And Operation In Air- Sign	Post. 525 Action 5	
Development in cities Facilities for motor truck Facilities for motor for for motor for motor for motor for motor for motor for motor for for motor for motor for motor for motor for motor for motor for for motor for motor for for motor for motor for for for motor for for for for motor for for for motor for for for for for for for for for f	Development in cities Facilities for motor truck Facilities for motor for motor truck Facilities for motor funct Facilities for motor function facilities for motor function facilities Facilities for motor function facilities for function facilities for function facilities for motor function facilities for function facilities	Designed for	440
Development in cities Facilities for motor truck Facilities for motor for University Facilities for motor for University Facilities for motor for Steels for Steels for Steels for Suitability of automotive Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for motor for Suitability of automotive Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for Suitability of automotive Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for Suitability of automotive Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for MARNER, E. P. ON SERVICE AND COMMER. Facilities for MARNER,	Development in cities Facilities for motor truck Facilities for motor for Universed Facilities for motor for Steels for Markers of Universed Facilities for motor for Steels for Markers Facilities for motor for Steels for Markers Facilities for motor for Suitability of automotive Facilities for motor for Suitability of automotive Facilities for Markers Facilities for Ma	Trunk-Line O- Complimentary dinner Efficiency of Efficiency of Life	
Toll roads for motor truck 228 Warring and the store of the content of the conte	Toll rotes for motor truck 228 Warrier, E. P. ON ESTABLISHMENT OF UN- Woodling-copposed engine Woo-yilinder-opposed engine Woo-yilinder-opposed engine Woo-yilinder-opposed engine Warrier, E. P. ON SERVICE AND COMMER- Worm-Gears Altonotive Worm-Gears Worm-Gears Altonotive Worm-Gears Worm-Gears Altonotive Worm-Gears Altonotive Worm-Gears Altonotive Worm-Gears Worm-Gears Worm-Gears Worm-Gears Worm-Gears Worm-Gears W	Assistant Secretary 199	468
wo-ovelinder-copposed engine 578, 587 words and specific fixtures 587 wars and Hornet radial air-cooled aero-intotrocoaches into from operating-temperatures desirable fixtures 627 wellopment of Spicer evelopment of Spicer evelopment of Spicer esent makes of automobile 625 ersity of Cincinnati, integrated Serial fixtures 627 wars and construction of cesting integrated fabric esent makes of automobile 625 ersity of Cincinnati, integrated serial fixtures 627 wars and construction of cesting integrated fabric esent makes of automobile 625 ersity of Cincinnati, integrated serial fixtures 627 wars and construction of cesting integration and construction of cesting integrated fabric esent makes of automobile 625 ersity of Cincinnati, integrated serial fixtures 627 ersity of Cincinnati, integrated serial fixtures 628 ersity of Cincinnati, integrated serial fixtures 629 ersity	wo-eylinder-opposed engine 578, 587 work of ARCRAFT SION AND PERATION BRANCHES OF (A R Fors) and the color of	T. ON Coop	472
ARRONAL STATE AND COMMENT TO THE PROPERTY OF STATE OF STA	ARRORAFT (A R Fors) ARRORAGE (B A Alies Arroration Arrorage of gear steel (A R Fors) ARrorage Arrorage of gear steel (A R Fors) Arrorage of gear steel (A R Fors) Arrorage of gear steel (A R Fors) (A Rales Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Arrorage of gear steel (A R Fors) Arrorage of gear steel (A Rales Automotive Arrorage of Arrorage Automotive Arrorage of Arrorage Automotive Arrorage Arrorage Automotive Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Automotive Arrorage Arrora	urn indicator 237 WARNER, E P, ON ESTABLISH OF	468
ARRONAL STATE AND COMMENT TO THE PROPERTY OF STATE OF STA	ARRORAFT (A R Fors) ARRORAGE (B A Alies Arroration Arrorage of gear steel (A R Fors) ARrorage Arrorage of gear steel (A R Fors) Arrorage of gear steel (A R Fors) Arrorage of gear steel (A R Fors) (A Rales Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Automotive Arrorage Arrorage of gear steel (A R Fors) Arrorage of gear steel (A Rales Automotive Arrorage of Arrorage Automotive Arrorage of Arrorage Automotive Arrorage Arrorage Automotive Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Arrorage Automotive Arrorage Arrorage Arrorage Automotive Arrorage Arrora	WO-cylinder-opposed engine 238 DERSTANDING AMONG RESEARCH SURABILISHMENT OF UN- SURABILISHMENT OF UN-	469
The state of the s	To the standard of the standar		
mater-cooling causes much trouble in nautic engines (George J Mead) 192, 609 wasp and Hornet radial air-cooled aero-motorcoaches much trouble in nautic engines (George J Mead) 192, 609 water-cooling causes much trouble in nautic engines (George J Mead) 192, 609 water-cooling causes much trouble in nautic engines (George J Mead) 192, 609 water-cooling causes much trouble in nautic engines (George J Mead) 192, 609 water-cooling causes much trouble in nautic engines (George J Mead) 192, 609 worm-geared axles and worm-gears and worm-geared axles and worm-geared ax	mater-cooling causes much trouble in nautic engines (George J Mead) 192, 609 wasp and Hornet radial air-cooled aero-motorcoaches from operating-temperatures desirable in nautic engines (George J Mead) 192, 609 water-cooling versus air-cooling, for air-self engines of spicer air engines on-ubricated fabric easent makes of automobile ea	328, 370 Warm CIAL AVIATION SERVICE AND COMMEN 196 Axles	
motorcoaches much trouble in mutic engines (George J Mead) 192, 609 Water Water Acid and, in crankcase Factors influencing accumulation of esting limitations attract inventive evelopment of Spicer engines wutshing in the efficiency at small angles essent makes of automobile essent makes of automobile essent makes of automobile essent makes of Cincinnati, integrated service at N. RALPH H. ON METALCLAD RIGID AIRSHIP DEVELOPMENT Inautic engines (George J Mead) 192, 609 Water Water Water Acid and, in crankcase Factors influencing accumulation of Effective Factors influencing accumulation of exercise with no, in head craft engines with no, in head craft engines water-cooling versus air-cooling, for air-service engines with no, in head craft engines Water Acid and, in crankcase Factors influencing accumulation of effective from the engine with no, in head craft engines water-cooling versus air-cooling, for air-service engines with no, in head craft engines Water Acid and, in crankcase Factors influencing accumulation of effective from the engine water-cooling versus air-cooling, for air-service engines Worm-Wheels Duralumin Suitable bronze for worm-wheels Choice of materials for Steering wrench-head bolts and nuts and wrench engine	motorcoaches much trouble in mutic engines (George J Mead) 192, 609 Water Water Acid and, in crankcase Factors influencing accumulation of esting limitations attract inventive evolopment of Spicer esting limitations attract inventive evolopment of Spicer esting accumulation of esting engines with no, in head evolopment makes of automobile estent makes of automobile estent makes of automobile estent makes of automobile estent makes of Circle attract integrated service at N. RALPH H. ON METALCLAD RIGID AIRSHIP DEVELOPMENT Inautic engines (George J Mead) 192, 609 Water Water Acid and, in crankcase Factors influencing accumulation of fare from the engine with no, in head craft engines with no, in head error influencing accumulation of fare from the engine with no, in head service engine with no, in head error influencing accumulation of fare from the engine water-cooling, for air-craft engines Water Acid and, in crankcase Factors influencing accumulation of fare from the engine water-cooling, for air-craft engines Water Acid and, in crankcase Factors influencing accumulation of fare from the engine water-cooling, for air-craft engines Worm-Wheels Duralumin Suitable bronze for worn-wheels Choice of materials for Steering Werench-head bolts and nuts and wrench for engine, development of 192, 303, 616 Engine development of 192, 303, 616 Water Acid and, in crankcase Factors influencing accumulation of 679 Water-cooling results in the engine water of the cooling of air-craft engines Suitable bronze for worn-wheels Choice of materials for Steering Werench-head bolts and nuts and wrench for engine, development of 192, 303, 616 Water Worm-wheels Suitable bronze for 471 Worm-wheels Suitable bronze for 627 Worm-wheels Suitable bronze for 627 Werench-head bolts and nuts and wrench for 192, 303, 616 Engine development of 192, 303, 616 Water Acid and, in crankcase Factors influencing accumulation of 679 Water-cooling results in the procedure of the cooling for air-development of 522 Worms	Wash and Track Steel 441 Grant Matonia	635
ity of fortune fiversal-Joints Acid and, in crankcase Factors influencing accumulation of esign limitation and construction of esign limitations attract inventive revelopment of Spicer igh efficiency at small angles on-lubricated fabric esent makes of automobile esent makes of automobile or, RALPH H, ON METALCLAD RIGID ARBHIP DEVELOPMENT 182 78 78 78 78 78 Acid and, in crankcase Factors influencing accumulation of Each of the engine with no, in head Water-cooling versus air-cooling, for air- wear- water-cooling versus air-cooling, for air- water-cooling versus air-cooling, for air- water-cooling versus air-cooling versus air-co	ity of fortune fiversal-Joints Acid and, in crankcase Factors influencing accumulation of easily eligible engine with no, in head specific engines Factors influencing accumulation of easily eligible engine engine with no, in head specific engines Factors influencing accumulation of Eactors influencing accumulation of easily eligible engine engine with no, in head specific engines Factors influencing accumulation of Eactors influencing accumulation of Ea	rautic engines (George J Measure and a street and a stree	471
Acid and, in crankcase Factors influencing accumulation of Espains Acid and, in crankcase Factors influencing accumulation of Espains Every of Cincinnati, integrated ser- N. RALPH H, ON METALCLAD RIGID AIRSHIP DEVELOPMENT Acid and, in crankcase Factors influencing accumulation of Kerosene engine with no, in head Water-cooling versus air-cooling, for air- Worms Worms Worms-Wheels Choice of materials for Wright Whirlwind type J-5 aircraft- Versit Whirlwind type J-5	Acid and, in crankcase Factors influencing accumulation of Espinis Esp	ity of fortune temperatures decision 182 Water 182 Water	472
Rectored application and construction of esign limitations attract inventive esign limitations attract inventive esign limitations attract inventive evelopment of Spicer Water-cooling versus air-cooling, for air- water-cooling versus air-cooling ve	Rectored application and construction of esign limitations attract inventive esign limitations attract inventive esign limitations attract inventive evelopment of Spicer Water-cooling versus air-cooling, for air- water-cooling versus air-cooling ve	C H Can Worm-good	
Rector, application and construction of easign limitations attract inventive easign limitations attract inventive evelopment of Spicer	Rector, application and construction of easign limitations attract inventive easign limitations attract inventive evelopment of Spicer		470
evelopment of Spicer 627 igh efficiency at small angles 626 626 ew cushion-ball 634 on-lubricated fabric 634 634 or esent makes of automobile 635 drive 629 rersity of Cincinnati, integrated ser-N, RALPH H, ON METALCLAD RIGID AIRSHIP DEVELOPMENT 671 671 671 671 671 671 671 671 671 671	evelopment of Spicer (and the spice of the s		
18h efficiency at spicer 627 wear 320 Choice of materials for Steering Wear 627 wear 628 Causes of, in engines 628 drive 629 drive 7 coedure for testing engine 7 coedure for testing engine 639 Airship Development 649 Silica content of 1926 samples indicates 641 Airship Development 641 Silica content of 1926 samples indicates 642 Silica content of 1926 samples indicates 643 Silica content of 1926 samples indicates 645 Silica content of 1926 samples indicates 647 Silica content of 1926 samples indicates 647 Silica content of 1926 samples indicates 648 Silica content of 1926 samples indicates 649 Silica content of 1926 samples indicates 649 Silica content of 1926 samples indicates 649 Silica content of 1926 samples indicates 647 Silica content of 1926 samples indicates 648 Silica content of 1926 samples indicates 648 Silica content of 1926 samples indicates 649 Silic	If efficiency at small angles of a small angles of automobile of continuation integrated serning of Cincinnati, integrated serning Airship Development of 1926 samples indicates Airship Development of 1926 samples indicates Wear Choice of materials for Steering Wrench-head bolts and nuts and wrench openings with the continuation of the contin	evel- inventive craft engines an cooling for ein	471
Causes of, in engines Depreciation and, with gasoline-electric Vice at Vice at Airship Development N, RALPH H, ON METALCLAD RIGID AIRSHIP DEVELOPMENT Z74 391 Wrench-head bolts and nuts and wrench Causes of, in engines Depreciation and, with gasoline-electric Design changes may reduce engine Silica content of 1926 samples indicates Uright Whirlwind type J-5 aircraft- engine, development of 1922, 303, 616 Yale transportation survey Zeppelins, signal method used by	causes of, in engines ersent makes of automobile erseity of Cincinnati, integrated service at N. RALPH H. ON METALCLAD RIGID AIRSHIP DEVELOPMENT Causes of, in engines Depreciation and, with gasoline-electric drive and, with gasoline-electric Design changes may reduce engine Silica content of 1926 samples indicates Wright Whirlwind type J-5 aircraft- engine, development of 192, 303, 616 Yale transportation survey Wrench-head bolts and nuts and wrench engine, Silica content of 1926 samples indicates Wrench-head bolts and nuts and wrench engine, Silica content of 1926 samples indicates Yale transportation survey Zeppelins, signal method used by		
Depreciation and, with gasoline-electric vice at Vice at Airship Development of the course for testing engine Airship Development of 1926 samples indicates Design changes may reduce engine 53 Vicinity Whirlwind type J-5 aircraft 10 Silica content of 1926 samples indicates 7 Vice at Airship Development of 1926 samples indicates 7 Vice at 192, 303, 616 Vice and nuts and wrench development of 192, 303, 616 Vice at 19	Depreciation and, with gasoline-electric vice at Vice at Airship Development of large content of 1926 samples indicates Airship Development of 1926 samples indicates and nuts and wrench openings with whirling type J-5 aircraft. Design changes may reduce engine silical content of 1926 samples indicates are vice at Airship Development of 1926 samples indicates are vice at the cause for samples indicates are vice at the cause of the cause for samples indicates are vice at the cause of the cause o	on-lubricated fabricated fabricat	
AIRSHIP DEVELOPMENT 274 Silica content of 1926 samples indicates 278 Yale transportation survey 291 Weather in night flying 278 Yale transportation survey 296 278 Yale transportation survey 206	AIRSHIP DEVELOPMENT 274 Silica content of 1926 samples indicates Silica content of 1926 samples indicates 278 Yale transportation survey 289 Yale transportation survey 290 291 Zeppelins, signal method used by	Denrected the Control of the Control	
AIRSHIP DEVELOPMENT 274 Silica content of 1926 samples indicates 278 Yale transportation survey 291 Weather in night flying 278 Yale transportation survey 296 278 Yale transportation survey 206	AIRSHIP DEVELOPMENT 274 Silica content of 1926 samples indicates Silica content of 1926 samples indicates 278 Yale transportation survey 289 Yale transportation survey 290 291 Zeppelins, signal method used by	vice at Vice at Design changes Design changes and muts and wrench	
391 Weather in night flying 671 232 Zeppelins, signal method used by	391 Weather in night flying Title cause for 391 Weather in night flying 571 232 Zeppelins, signal method used by	ARBHH H, ON METALOT 274 Silica cort for testing engine 68 engine, development 52 aircraft	10
weather in night flying 671 232 Zeppelins, signal method used by	weather in night flying 671 232 Zeppelins, signal method used by		16
232 Zeppelins, signal method used by	232 Zeppelins, signal method used by	weather in night flying 671	
signal method used by	aignal method used by 210	232 Zeppelins, signal Z	6
	210	signal method used by	

